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Ladino /

was for many ages  
It ~~has been~~ unfortunately  
the practice to wrap up <sup>the</sup> all  
sciences in the dead languages,  
~~too~~ by which means the  
knowledge of them was confined  
exclusively to the members of  
the learned professions. After  
the revival of letters by means  
of the reformation and the  
art of printing, the sciences  
were emancipated from the  
dead languages, but they  
<sup>so much</sup> were <sup>so</sup> enveloped in obscure  
and ~~very~~ technical terms  
as to be intelligible only



However strange it may  
sound, I ~~am~~ ~~now~~ maintain  
there is not a truth in  
medicine that is worth  
knowing, or capable of be-  
ing applied to the cure of  
diseases, but may be com-  
prehended by a lady, as  
easily as by a gentleman,  
and when we consider <sup>further</sup> how  
much more <sup>the charge of</sup> of the health  
and lives of a family is  
committed to its <sup>mother's</sup> female,  
than to its <sup>fathers</sup> male head, it  
must be admitted that



to  
~~by~~ gentlemen. Of late years,  
pains have been taken to  
render them intelligible to  
ladies and even to young  
people. The science of medicine  
in a particular manner  
has undergone a partial  
revolution ~~from the labors~~  
~~of~~ in this respect, ~~and has~~  
~~been fixed~~ but much  
remains yet to be done  
to ~~render~~ ~~it~~ accommodate  
it to the <sup>female</sup> mind.  
~~and~~ The design of the following  
~~lecture is not so much~~

parts of them as will  
be I hope be perfectly  
intelligible. ~~The~~ I begin  
by remarking that Animal  
life as applied to the  
human body consists  
in 3 things viz:

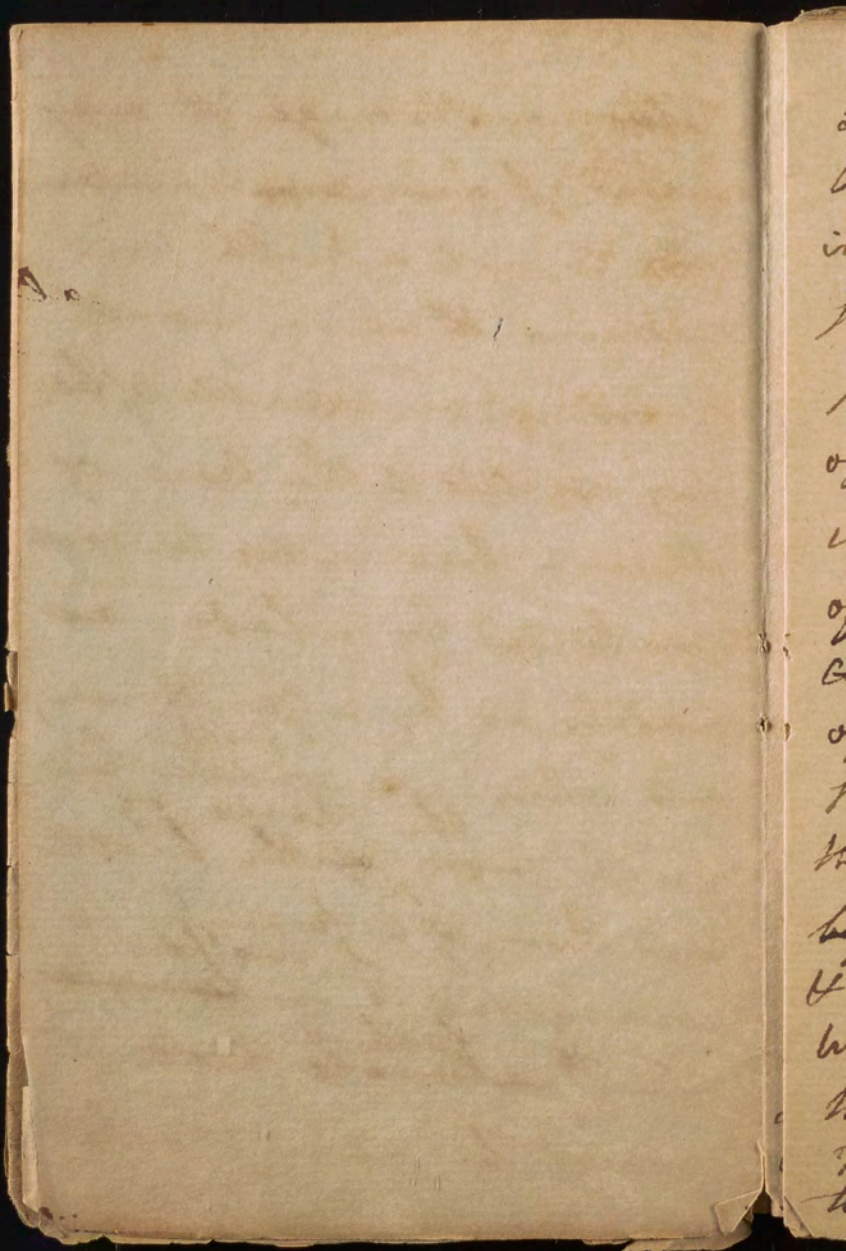
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In order to enable us to  
understand our subject it  
will be necessary to pre-  
mise 3 propositions.

April 16. 1801.



However strange it may  
seem, I ~~am~~ ~~now~~ maintain  
there is not a truth in  
medicine that is worth  
knowing, or capable of be-  
ing applied to the cure of  
diseases, but may be com-  
prehended by a lady, as  
easily as by a gentleman,  
and when we consider how  
much more <sup>the charge of</sup> the health  
and lives of a family is  
committed to its <sup>mother</sup> female,  
than <sup>to its fathers</sup> male head, it  
must be admitted that





some instruction in the  
Animal Economy, and  
in the principles of medicine  
should form an essential  
part of ~~this~~ the education  
of every woman ~~is~~ who  
expects to be the mistress  
of a family. Besides <sup>watching</sup> ~~taking~~  
<sup>over</sup> ~~care of~~ the health & lives  
of her own children & servants,  
she will be enabled to act  
~~the part of a Lady Bountiful~~  
by administering medicines  
& advice to her <sup>poor</sup> neighbours  
who were unable to obtain  
the assistance of a physician.  
The lectures which I am about  
to deliver, are not intended to

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as a system of instruction in  
medicine. Far very far from  
it. They will consist of a  
selection of such subjects  
as are most practical &  
useful, and such as will  
lay a foundation <sup>future</sup> for your  
~~improving yourselves by~~  
acquisitions of medical knowledge,  
by reading & observation.

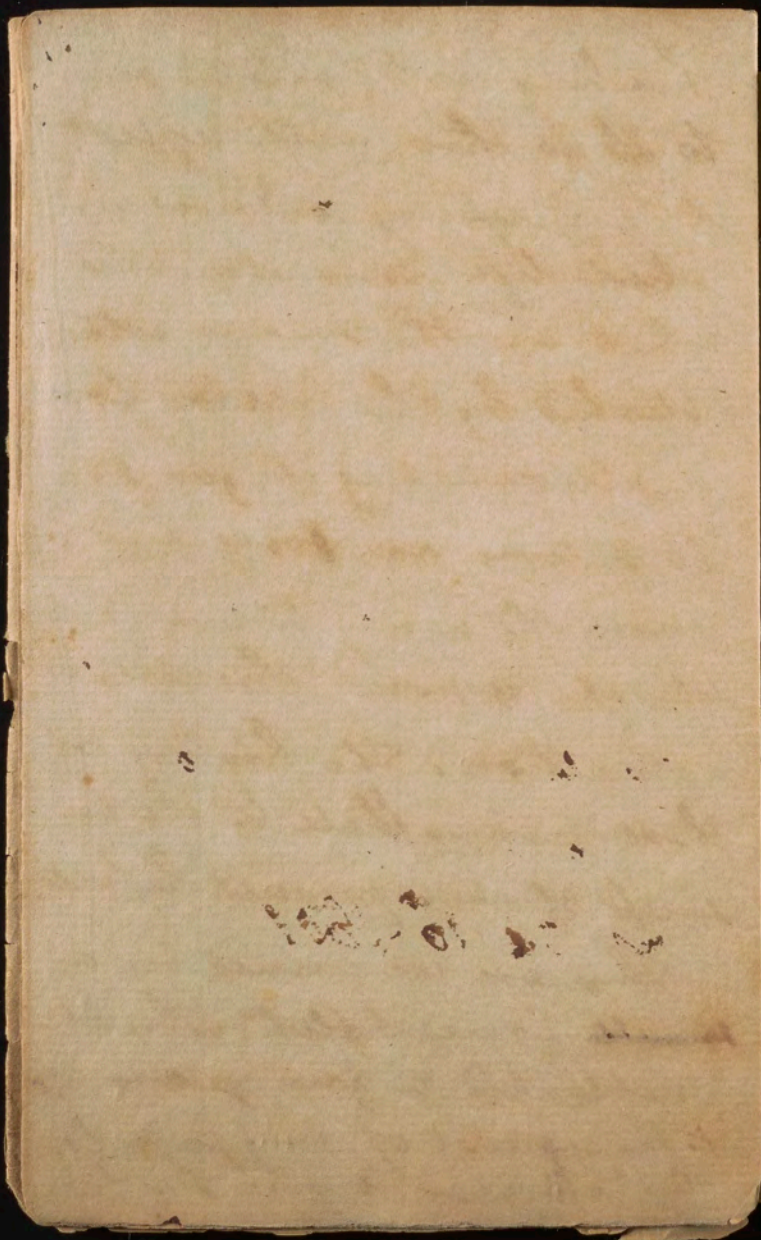
The first object of our inquiries  
shall be one which is  
deeply interesting, ~~to~~ to us  
all, and that is the science  
of life. prolonging ~~to~~ prolonging  
~~prolonging~~ this invaluable science  
ing, is the business of the

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Healing Art; and in order  
to ~~do~~ do this, with effect  
it is necessary to know in  
what life consists, and  
what are the means esta-  
-blished by the Creator for  
maintaining it for 50,  
60, & even an ~~100~~ years,  
under the many circumstances  
which oppose & threaten its  
extinction. The history of  
these means shall be the bu-  
-siness of our present lecture.

— They are contained in a  
~~small~~ pamphlet, which  
I published a few years ago  
at the request of my pupils.  
— I shall read to you such



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young ladies had <sup>the</sup> pleasure of  
The last time I ~~was~~ addressing  
some of you, I endeavoured  
to show you the folly and  
impropriety of acquiring  
such accomplishments as  
were not accommodated  
to the present state of society  
- manners & government  
of the United States. - To  
supply the place of these  
accomplishments, I beg  
leave to offer to your atten-  
-tion a few plain and  
simple remarks upon  
such parts of national

Philosophy & Chemistry  
as are applicable to  
Domestic & <sup>or kitchen</sup> culinary  
purposes. This kind of  
knowledge will be useful  
to you in a variety of  
ways. It will excite a  
taste for such books as  
treat more fully upon  
these subjects, & raise you  
above the necessity of stooping  
to novels & romances for  
entertainment.



2 It will furnish you  
with Subjects for rational  
& improving conversation  
& thereby preserve you  
from dishonouring your  
Understandings ~~and~~ wasting  
your time by deriving all  
your conversation from  
~~the~~ dress - fashions - or  
Scandal.

3 It will <sup>cause</sup> ~~make~~ your  
Society to be sought for  
& courted by sensible

Men, & ~~make~~ be the  
means of banishing  
fools - & Coxcombs from  
your company. -

4. It will afford you ~~some~~  
pleasure  
in solitude, and  
render you independant  
of public amusements  
for your happiness.

5. This kind of knowledge  
will make you useful  
to your parents while  
you remain in sub-



ordination to them &

6<sup>th</sup> <sup>teach you frugality</sup> It will qualify you  
& economy & industry  
to shine as wives &

mothers - & mistresses  
of families when it  
shall please God to call  
you to fill those im-

portant female stations.

Definition of Chemistry.

try. -

Heat & mixture two  
powerful & universal  
agents in nature & art.

we see them every where.  
Rain - earthquakes -  
meteors &c - mixture  
in all arts. Baker. flour  
& yeast & water - brewer  
malt - hops - water -  
brass founder - copper & zinc  
&c - of Heat - all from  
derived from the sun -  
lodged in all bodies - excited  
1 by percussion - flint &  
Steel.  
2 by attrition - ~~friction~~ <sup>friction</sup>  
wheels - two Pichs by the



Indians.

3 Fermentation - hay

Sticks -

4 Misture - Lined water

Ships caught a fire by it

5 Access of Air - in what is  
called phosphorus. -

6 Collected rays of the sun  
in a burning glass. -

of the application of a burning body.

One or two laws of  
heat

2<sup>d</sup>: Its pupae this soft

& spongy bodies move  
slowly than dense bodies.

hence woven garments  
warmer <sup>2</sup> than linen or  
Silk - hence feather  
beds warmest covering  
- hence eider down coverlets  
so useful. - hence snow  
keeps the ground warm  
- as in Canada - verdure  
early in the Spring - retains  
the heat of the earth. hence  
the wool of sheep in cold coun-  
tries - becomes hair in  
warm - - hence fur houses  
& Carr. papers show by this white  
bores - hence the use of white



gets & cleaves in humaner  
& of grey or white hairs in old  
13 <sup>people</sup> ~~lun.~~ Equilibrium of  
heat - Lakes - seas - heat

rivers & warmth of air around

& of orchards not freezing

near rivers in the Spring

of the year. — Thawing of

Apples - & other Vegetables -

~~opping of the weight of ice.~~

<sup>if reason of damp air being so cold in</sup>  
~~winter is not disagreeable in summer~~

Heat ascends in the highest

part of a room the warmest.

Stairs in Germ. set high -

the French Slap high - ascend on

1 Cold comes in below - & heat

Chairs to beds - floor cold -

goes out at the same time

above illustrated by a Candle

air like heat tends to Equilibrium

5 Air heated by reflection - coldness

of summits of mountains - Bal:  
cloins - Lect: 2<sup>nd</sup>

### Effects of heat

1 Expansion - all bodies  
expand <sup>th</sup> w<sup>th</sup> heat, & contract  
<sup>th</sup> w<sup>th</sup> cold except ice. -

Air - in a bladder must rarefy  
& in summer - is then tight  
& in a thermometer

Iron in bolts - traps &c in  
clothes &c. - wood for cracks

from water expanding with  
heat. Spits fire - explosion of red <sup>wh</sup> when  
heat <sup>ref iron on middle</sup> - <sup>th</sup> water expands  
toward into ice

~~cold~~ - hence ice breaks bottles -  
bursts conduit pipes -

- hence its use in crumbling  
the ground - hence its effects

in crumbling houses - ~~can~~

Ice suddenly formed <sup>X</sup> in the swelling  
of the globe at the equator by heat -



2 Fluidity - all bodies are  
capable of it by heat - water  
fluid only from heat - be-  
comes ice by <sup>the</sup> absence of it. It  
is at 32°: fire melts it at 62°.

3 Evaporation all bodies  
<sup>the Rajin by it -</sup>  
capable of it - by heat. Its effects  
<sup>Sept: 5</sup> hence  
it produces cold - ~~hence~~

new washed rooms cool, & to  
sickly people dangerous - hence  
body in a heat of  
sweating cools people. remarks  
120° - is kept at 96°

The bodies therefore of more  
evaporation - & removing  
excess of matter increases it -  
hence windy days dry the  
roads - hence windy days

ful coldest - remove pur-  
-ification - & give access to  
cold air to come in contact  
with the body. - great force  
as in steam engines -

4 Flame - <sup>fresh</sup> Air necessary to  
it.  $\Delta$  <sup>e</sup> cause of flame -  
the same in all bodies - may  
be comm<sup>d</sup> - Air becomes  
impure by it - is said to  
be phlogistigated - kills ani.  
as clay -  
imals - & extinguishes a candle

<sup>& unical</sup>  
The moving form of flame  
owing to the action of air on  
it - soot - owing to incom-  
-plete consumption of vegeta-  
-ble matter - The more perfect



of consumption - the less  
soot - <sup>as precept</sup> ~~however~~ if is inflam  
mation - or only burnt wood  
we infer from <sup>that</sup> taking fire  
in chimneys -

Effects of heat on Vegetables  
- hide retreat when he retires  
& disrobe themselves of all their  
flowers - leaves &c - on animals  
begins it in chickens - as  
in Egypt - continues it as in  
many insects - when <sup>it is</sup> ~~heat~~  
withdrawn - they become  
torpid - and are revived only  
by <sup>the</sup> return of its cheering  
influence. Happily proportioned -

- Too much would expand  
all fluids - rivers overflow  
of banks - solid bodies on earth  
be melted - Too little - all nature  
be tied in icy chains,  
& our globe present y<sup>e</sup> awful  
phenom: of another chaos.  
Lect: 3

on mixture

1 solution - 2 mixture  
3 diffusion - 1<sup>st</sup> cold - 2<sup>nd</sup> heat  
1<sup>st</sup> many bodies 2 only two  
can be united. Eg: Salt in  $\nabla$ .  
& Dr &  $\nabla$ .

Decomposition - add salt  $\nabla$   
or sp<sup>l</sup> salt in - to a solution of  
marble in. Dr &  $\nabla$ . called  
Relative attraction. universal -  
turn nature. - tables. -



Salts

as (or or or) native - & from:

Acids - mineral - Veg: animal

marbles Sy<sup>r</sup> of Violets red

2 kinds

Alkalies - Sy<sup>r</sup> of Violets green

~~Properties~~ -  
effervesces w acids - cause

Elect. Attraction - fixed air

separated - weights  $\frac{1}{4}$  & 9:

Alkali 3fs - or 9W: balanced

then mix the two & weigh y:

mixed w air - canstri w it -

burns y Skin  
left 4<sup>th</sup>

Neutral Salts

mixture of Acid & Alkali

Kitchen Salt - Salt Petre

Glauber Salt. -

extensive use in corn: life.

corn: salt - from springs.  
none near  $\frac{1}{2}$  ocean. why? -

2 Rocks - <sup>crinoids</sup> ~~Bornus~~ 3: Sea - why

Salt - I preserves from Pontif:

2 is more Bryant - is more

Salt between tropics & <sup>2</sup> tow<sup>d</sup>.  
North & South poles. - How  
cause?

Oct: 2 By heat of  $\frac{1}{2}$  Sun -

as at Cape Verd Islands. 2<sup>nd</sup>

from visiting as Eng<sup>d</sup> & France. X

3 By freezing  $\frac{1}{4}$  ice fresh -  
 & How refined -  $\frac{1}{2}$  is first distill  
 Netre from sweepings of

Cellars - Barns - Bridges in  
addition of Ley - it separates  
houses. - good house wines  
east & whites with or -  
I know this -

Proverbs - Vinegar & Nitre



## Earths

They are 1 calcareous or  
lime - marble - Chalk - a  
great body - esp<sup>d</sup> two first  
in Penns<sup>a</sup> - Chalk in In.  
- gland - white Cliffs of Albion.  
Fire ~~to~~ ~~discharges~~ ~~fixed~~ air  
effervesce with acids - & fixed  
air discharged -

2 Gypsum - as plaster of  
Paris - Sand -

3 flinty - as stones - up  
to precious stones - Jewels  
one worth 100000 in the  
crown in y<sup>e</sup> tower. One their  
variety of color to metallic

Matter - artifl. ones - paste  
miniature <sup>the</sup>  
bushels. melt w: Alkalies &  
good glass.

~~Diff~~ Earths  $\frac{1}{2}$  fire will not  
act on - as Ising glass - &

Asbestos - called Salamander

Stone - spun <sup>the</sup> w: Cotton - resist fire  
Economy white. <sup>in</sup>  
= and ~~very~~ y dead in ~~the~~ loose.

garments made of y: Dr  
Franklin's Story

5 Clays. - Variety of color

to metallic matter. Fire makes  
them white - alum what? Exp?

Decompose it by alkali - miniature  
all Earths - Diff<sup>r</sup> among  
with flint - Chind -  
owing to the deluge -

sent. 5<sup>th</sup>  
on Inflammables

1 Bowl of all kinds as sea



Kamul coal in particular  
or fossil coal - Charcoal - ~~wood~~  
peat - or turf - <sup>the</sup> abounds w<sup>th</sup> ~~oil~~  
<sup>roots of vegetables</sup>  
containing  $\Delta$  - wood.

2 Oils - Aromatic & Unctuous -  
Sp<sup>ts</sup> of Turpentine &c animal  
& veget. - Butter - Sweet oil -  
former - fat - bears grease &c

Heat makes <sup>the</sup> various contain  
mullage, essence of  $\Delta$  &  $\Delta$  <sup>now purified</sup>  
3  $\Delta$  equal parts of  $\Delta$  &  $\Delta$   
origin - bowels of <sup>the</sup> earth - ~~but~~  
metals - catches fire there - water breaks  
in - Steam & fixed air cause of  
earthquakes. <sup>also unites w<sup>th</sup> it -</sup>

4 Sp<sup>ts</sup> of Wine - <sup>Gold & silver</sup> ~~but~~ by distillation & in.  
Acid & fine oil - Other made  
of ~~oil & acid~~  $\Delta$  &  $\Delta$  - is a fine  
Oil - Exp<sup>ts</sup> - mill dams.

5 Resins & amber. -  $\Delta$   
<sup>Disphic in</sup>  
<sup>varnishes</sup>

6 Phosphorus - and  $\Delta$  -  
metals - light wood - fire fly  
Ocean - Artif<sup>l</sup> & Boon heavens  
Story. -

We whose Names are hereunto an-  
nected agree to pay to the Treasurer of  
the Humane Society an annual con-  
tribution of one Dollar towards sup-  
porting the benevolent designs of  
said Institution.



Lect: 6 - Octob<sup>r</sup> 23<sup>rd</sup>:

on metals

Divided into metals - and  
ferrimetals - 1<sup>st</sup> malleable  
as lead - 2<sup>nd</sup> not as  $\gamma$ .

- Metals contain ~~calx~~ <sup>$\Delta$</sup>  -  
the extraction of it by fire  
or acids makes  $\gamma$  Drop -  
called Calcination. The resto-  
-ration of it called reduction.

E.g. in lead - grease restores  
it. why that wonderful  $\gamma$   
our bodies sh<sup>d</sup> be raised at  
the last day. The soul like  
~~a~~ as it were its  $\Delta$  - when

Separated by death - the body  
becomes like a calf of metal -  
falls into a powder - but by  
~~the~~ <sup>the</sup> reunion of the soul it again  
assumes its ancient form.

### Gold

The heaviest of all metals - the  
purest - least liable to be  
affected by fire - air &c - hence  
most useful for coin. ancient  
& universal. 2 for buttons -  
It watches & a very durable.  
persons most careful of y:  
3 for gilding - capable of exten-  
sion & in wire & leaf almost



beyond conception. precious  
furniture. loses its color  
in the light dark - light the  
cause of color in plants - The  
color of gold delightful to the  
eye - next to green - <sup>+</sup> w: the  
grandeur of  $\frac{1}{4}$  city  $\frac{1}{4}$  new  
Jerusalem ~~in~~ <sup>th</sup> whose walls  
are to be 1500 miles high, &  
all of pure gold. <sup>dissolves in Aq. Regia -</sup> found in  
all parts of the world - Brazil  
Siberia

next to gold in all its proper-  
ties & uses. hereafter in  
plate. found in Mexico  
& Spanish dominions.

Twenty million of dollars  
made here annually. -

The Spaniards carry - hence  
y<sup>r</sup> money drawn from them  
to all parts of the World. disposed  
in ~~or~~ making lunar caustic - when  
diluted stains ~~from~~  
y<sup>r</sup> hair black -  
most useful - most destructive.

~~First used for making weapons~~  
~~of death~~. Implements of husbandry.

- Dry from it - Artificers tools of  
all kinds. - Surgeons instrum<sup>ts</sup>.

- Crumbling vessels - be a  
great blessing to the world. I wish  
I ~~would~~ add - <sup>was not forced to</sup> employed in <sup>early</sup>

war, & in making instrum<sup>ts</sup>  
of death - <sup>this not always the</sup> But ~~let us~~ <sup>we</sup> look  
<sup>by the glass</sup> down to the time when swords



Shall be turned into plough  
shares, & spears into pruning  
hooks, & nations learn war  
no more. — ~~find all~~

Iron melted by heat — in  
casting pots — the heat immense.  
Story of Cannon Iron works in  
Scotland. — <sup>all</sup> Acids act on it  
green Vitriol — what — ? Water  
acts on it — & corrodes it — rust  
what? — Flint & Steel. I. G.  
Astringent vegetables — & Iron  
Bark color —

Found every where — diffused  
in animals & vegetables — even  
in honey. —

## Copper

all acids act on it  
Heat melts it - D7 Blue Vitriol  
or blue stone - a corrosive  
Alkalies too I suppose common.  
on a solution of it - beautiful  
veg: acid - Verdigrise - assume  
blue - <sup>neg: acid - white</sup> Copper & Zinc - Brass -  
~~ringing bells~~ & minchbeck - Bells  
- telescopes & microscopes - common  
Copper thin. Lead

Easily melted & calcined.

All acids, especially vegetable  
act on it - <sup>becomes sweet</sup> Sugar of lead - white  
lead <sup>Printing types - lead & Z</sup> Vinegar & lead. <sup>printer</sup>  
made of lead & Zinc.

Zinc plates iron - in solution  
of D? - not acted on by veg: acids. useful

admixture D7 & Z. White  
Vitriol - found in Calamine.



4

Dissolves in all acids - in  
Ox Calomel. -

not in Water - no Vermifuge  
mixed w<sup>th</sup> tin foil - makes  
looking glasses. - gives  
brass - unites w<sup>th</sup> softest O  
- takes off gold rings. -

Let <sup>th</sup> 7  
on Waters

One simple water - all  
different from foreign matters.  
These visible - or invisible.  
~~The finest water - rain -~~  
- 1 pollen - red sand - 3 red  
animals as in South Sea - h  
green - from Vegetables - coral

foul air from stagnating water -  
good out of evil -

Invisible ~ Salts - common  
Salt detected by Lunar caustic.

earths - calcareous

metals - chiefly iron -  
known by astring' vegetables

Eg:

fixed air - Pyrmont water -

~~Pure~~ Rain - Snow <sup>lightest & best</sup> ~~purest~~ <sup>for boiling</sup> Vegetables  
water - next river - ~~Creus-~~  
soft - known by Soluble - Hydros.  
Springs - pump - by  
taste & colour -

Stagnating dissolves foreign  
matters - pure water of  
New Jerusalem - clear as  
crystal proceeding out the



will contribute to health  
& pleasure -

### Airs

1 Common - 1 gallon in 1  
minute - 15 pounds on a square  
inch <sup>Above</sup> - 30,000 of a middle fired man  
how exist? - internal air resists  
it 50 miles high - Hygrom. & Securis l.  
Barom. brought or pure

2 Deploded air -  $\frac{1}{4}$  or  $\frac{1}{5}$   
of common air - abounds  
in is secreted from Vegetables.  
Abounds in  
~~infectious~~ - stored  
lead - 2 to in Salt petre -

is the cause of red color in red  
lead, or wafers - imparts red  
color to lams - & do to the  
blood. The more of this air  
<sup>Animals live</sup>  
y<sup>e</sup> purer - 5 times as long in  
it as in common - hence the  
refreshm<sup>t</sup> of vegetables near a  
house - is exhilarating - see  
Milton <sup>Amphibian air - pure</sup> The new heavens  
no fogs - exhalations - true longevity -  
means new atmosphere -  
probably all Dep<sup>d</sup> air  
often called so - It will contribute  
like y<sup>e</sup> pure ~~air~~ water, to health  
& pleasure of the inhabitants  
of the new Jerusalem.



3 Inflammable Air 29

Ballvans - fire damp -  
catch w<sup>th</sup> blow not w<sup>th</sup> sparks.  
mines in Cornwall - Wheel-  
of gunpowder & reverse -

*Phlogistated*  
4 Fixed Air - 1<sup>st</sup> from fire

2 breath of animals - Air  
charged w<sup>th</sup>  $\Delta$  Basis of gunpowder  
& *pulv. fulminans*.

5 fixed Air - from marble

4 & 7. wine cellars - candle

grotto del cane near Naples.

Basis of gunpowder & *pulv. fulm.*

of Vegetables -

Light - cause of color - ~~sun~~

Variety of color & diff<sup>r</sup> quan:  
-ities of light - sun cause of  
circulation of sap - turn to  
it - grow most towards it -  
Indians be - Thorn bush in  
a garden loses its thorns -



21. 1. 1210

Lect: 8:  
          

Having finished gen principles  
- we come to <sup>r</sup> application.

Considering how much duty &  
necessity conspire to confine a  
lady to her house - its conveniences  
of great consequence.

1 Direction - South & North -

East & west from Europe esp<sup>y</sup>.

Britain - north walls hardest to pull  
coolest in summer &  
Down

warmest in winter. Entry - win-  
dows doors opposite to each other.

2 Materials - Logs - boards -

Stone - bricks - mud - called in  
marble - most wholesome  
England cobs - which best? -

Wood - in this country - absorb

internal moisture - Stone  
rust - absorb D<sup>o</sup> - hence heavier  
when wet - than dry - Bricks  
when plastered moisture <sup>2</sup> when  
not - Mud - or Cols 2 feet thick  
excellent - absorb. &c.

3 Besides direction - large rooms  
- in winter - draught less felt  
- in summer less collection of  
heat - windows open above  
& below -  
in summer - closed in winter -  
- Some houses windows not oppo-  
site - sh<sup>d</sup> be a throughfare  
- a ventilator - what<sup>2</sup>  
- warmth increased by <sup>thick in all</sup>  
listing <sup>carpets</sup> & sand bags low ceiling



x By night - blanket under y sheet - bed covering  
curtains - not too close.

form of y fire place - projecting - small - Iron benches & sides - closets at a distance from fire - or kept open. -

Screens - raising the feet above the floor - setting high. Ashes in the hearth. ~~By night - not so good~~  
~~coolness promoted by 2 thick walls~~  
or a double wall - Sheds - trees

from shade & evaporation which produces cold - <sup>Situation - height -</sup> Open all round

as summer houses & keeping windows & shutters close while y sun shines on them. <sup>1/2</sup> a floor

of earth - bricks - or marble - <sup>which should be kept open</sup>

5 Sitting near a chimney - circulation of air from y downwards  
6 high ceiling. <sup>cools & keeps neat</sup>  
x from y upwards in summer & y towards chimney.

By night - <sup>large & single beds warm</sup> ~~matrasses~~ <sup>leather</sup> - a room  
with a chimney - not windows open

4 Fire places - small &c - Stoves  
clay - Brick - iron -  
open - & close - the first called

Franklins & Rittenhouses. -

the 2<sup>nd</sup> close - various - tinplate  
for baking - boiling - The longer  
the funnel - & less soot - more  
heat - Economy - wealth of  
Opportunity from them.

5 Smoky Chimneys - disagreeable  
in flame & eyes - stain furniture  
& Walls - darken & <sup>the</sup> complexion.  
& lastly hurt the temper.

Heavy - Smoke 'dont ascend  
by its weight - is driven up  
by raref. Air - what?



London smoke - the form of  
funnel - nothing to do w<sup>th</sup>: drawing  
- no drawing - smoke driven up  
by surround<sup>d</sup> air. <sup>th</sup>

Let: 9.

1 Too tight room - no current  
of air - common in new houses  
small as well as great rooms  
- cured by letting in air above  
- a ventilator or was is das.

2 Too <sup>or funnel</sup> large fire place - <sup>rare</sup> Air  
does not fill <sup>the</sup> whole of them -  
hence they fall - upper rooms  
small - lower ones larger.

contract fire place by means

3 Short funnel & <sup>contract</sup> ~~open~~ it

4 Two chimneys attracting

from each other - <sup>Avoid</sup> ~~avoid~~ them.

5 tops of houses or a hill  
- a turncap covering above &  
on 3 sides - & raising y<sup>e</sup> Chimney

6 Inconvenient Situation  
of doors - sweeping air too  
suddenly - blows it out &c

7 Smoke from above -

a slider <sup>sweeping</sup> chimney's  
glazing w<sup>th</sup> salt - <sup>stroke</sup> extinction of fire  
<sup>representing it at right angles</sup> -  
Valleys - always equal <sup>any way</sup> ~~any way~~

ture - proper to keep things from  
heat & cold - <sup>the</sup> cellars w<sup>th</sup> chimneys

keeps vitnals from moulding  
by promoting circulation of  
Air.

wood preserved by drying, &c



then painting - direction in which  
wood has grown - posts - burning <sup>ends on</sup>  
of beams or covering them w:  
resin - before they are put into a  
house - walls preserved by plastering  
- weather boarding -

washing - white washing -  
opening windows - Ventilators.  
removing offal  
matters - especially Vegetables  
when putrid &c - <sup>None of potatoes in portola</sup> Stables not in-  
jurious near a house - but whole

some - - ~~convenient~~  
~~Useful - Doubtless - when off~~  
~~I resist to accepting them. I will to~~  
~~Insects - flies - wasps - bees -~~  
~~I know not how they creep but to~~  
~~ring - or packing in pits in raising~~  
~~exquisite patience - prompt cleanliness~~  
~~beetles~~ - standing near

- monuments of the fall of man.  
tell us if we have forfeited  
our right to <sup>the</sup> earth, & that while





hint to us to repair our  
houses found only in old ones.

Destroyed - 1 by traps. 2 Cats - <sup>deadest</sup> not  
to be fed. - or if ~~human~~ 3 by arsenic  
or ratsbane - wrong - dangerous  
to children - & rats when they die  
in their holes taint a house.

If humanity revolts as yesterday  
at either of these is a Bill, or 5  
shaving, or cutting the hair. terrifies  
them away. -

Lightning & Thunder <sup>C</sup> same  
~~for~~  
when near no perception of  
time between <sup>2<sup>n</sup></sup> ~~Y.~~ - same of  
Electricity <sup>plus & minus - or equilib</sup> - conducted by  
metals. <sup>Drum.</sup> & not by glass.

never y<sup>e</sup> use of iron conductors  
draw it silently into y<sup>e</sup> earth.  
Sharp points best. King George  
& Dr Franklin's Story.  
Mr Patton at the College.  
where no rod - avoid being  
near a Chimney - Window  
or door - middle of room -  
avoid trees - see Routes how  
they act.

Kitchens - ~~Best of light~~ Too often they are.  
-cupboards of dirt & w<sup>h</sup> is worst  
Vice. To prevent both Anthony  
Benzeret's proposition - In  
large families - & in the present  
State of civilized Society im=



possible. ~~It~~ <sup>out</sup> ~~be~~ ~~ought~~ ~~of~~  
light ~~to~~ & dirt - out of light  
- if vice - out of hearing -  
under ground - <sup>best in towns</sup> - under par:  
- Court - Rushes - or straw pre:  
vents passage of sound. - If  
receptacles of dirt & vice - <sup>or bad manners</sup> - best  
of keep children out of them.

~~But~~ They increase both <sup>for</sup> vice  
in a particular manner  
vice knowledge is increased by  
being propagated. But if <sup>is</sup> ~~if~~  
there no way of prevent this  
dirt or vice <sup>to our proximity</sup> - are our law:  
to all abandoned to destruc:  
& ruin? no - the our law:  
to use the words of L<sup>d</sup> Chester.

we are unfortunate friends  
or the words of our Saviour -  
our "brethren". There is one  
& but one method of preven-  
-ting the Disorders of a kitchen  
the presence of a Mistress.

---

Master's Eye - Just of former  
fact - the ~~eyes~~<sup>eyes</sup> - ears &  
the tongue of a Mistress  
in her kitchen a remedy for  
all disorders - I<sup>d</sup> visit it two  
or three times a day - it is in-  
-conceivable w<sup>t</sup> a woman  
lives by it - & after all - a  
man loves y<sup>t</sup> woman most  
whose affection for himself he  
feels every time he sets down



to a meal, or puts his  
hand in his pocket. not  
incompatible w: rational  
duties of life - tends to <sup>Defends</sup> ~~make~~  
liberal & extensive knowledge  
from Censure. Solomon's Wife.  
husband no need of Spoil, why? best  
well of acquiring confidence & influence over  
children he have over -  
a husband.

Extensive brisk breath - pump -  
- with horse man it. wash  
house.

~~off~~ <sup>dup.</sup> house - Hums - hay -

<sup>woollen</sup>  
Dress - preserved by tobacco  
Cedar Shavings - Clove -

Camphor - Celler in a chest.

Dampness &c also by wrapping between  
linen. Grease by chalk & hot iron - and  
~~by turpentine~~ by turpentine - how?  
Wax & Tars by Iron mauls - Or by  
Wine & salt steam.





Leptouched - Tin safest - has  
Amie - powder of tin & Zinc  
safe - mugs & plates - Economy  
in the latter saves knives - and  
cloaths - tho' old fashioned. -

Iron safe - durable - tho' acids  
& even water act on it - no  
injury from it - teapots best  
except plate - pots best -

of China - is composed of -  
Enamel - safe .

Glass - is made of - white glass  
of lead - Curves in ~~the~~ wine  
glass how made - safe no  
Solvent in Chemistry acts on  
it.

Earthen Ware - Bone. Green's

Delf - to Enlivenware - glazed  
by ~~lead~~ calx of lead diffused in  
water & melted - vitrifies <sup>a</sup> Clay.

- Dangerous for acids - dissolve  
lead. -

Looking glasses - tin foil &

Q - Pictures - crayons - oils -  
Goures - wood & glass - metals. -  
Prints & Microscopos - engraving  
& etching -

Breasts - plaster of paris  
burnt - & cast - Basso relievo,  
& Alto relievo. -

Beds - Shuts - sh<sup>d</sup> be well  
aired - daily to discharge  
Inspiration - is filled w<sup>th</sup>  
purgative air & g<sup>as</sup> a candle.



Washing - rapid delicate colors  
Bleaching - Sun. & Alkali or  
potash -

Ironing - smooth - caution  
not to put hands in cold  $\nabla$ .

Soap - oil - or fat & alkali  
from ashes - hardened by  
salt - how - Venice & Castile  
of Olive oil & soft alk. col by  
beet -

Starch - of wheat & potatoes -  
~~washed~~ <sup>2 mths</sup> fermented & washed -

Blue - to prevent yellow -

Dyes - 1 beautiful - like the  
works of nature - preserves  
many things - like paint.

Colors - what? Vibgyor.  
Prism - Different brown

Vegetables - metallic and  
earthy salts -

Clocks - & Sacks - Boxes of  
multi<sup>t</sup> powers - I increase the  
powers of man, & lighten labor.  
- move by weights & springs -  
or smoke -

Lamps - new fashioned Lamps  
Smoke - Candles - Turmeric  
- tallow - Resin & myrtle Wax.  
<sup>& toe</sup>  
Cotton Wicks raised best.

Pens - boiling quills in ashes.  
consumes their Oil.

Ink - black - how made -  
<sup>Pigments</sup> - & Clays -  
pigments - used in China - not  
so good as ink -



Sympathetic - See Sat: and  
Experiment disposed in line water  
or hepatic & vis

Paper - from 2 ago -  
Booths - <sup>see a</sup> printing office.

Therm<sup>2</sup> & Barom<sup>2</sup>. see y.  
necessary in a house. esp:  
the latter predict changes in  
the weather.

Means of preserv<sup>g</sup> beauty  
depend on teeth - &  
Beauty - Shape - Complexion  
+  
- teeth - line of beauty w:  
Shape promoted  
By loose dress - erect pos:

line of body & head - dress to  
teeth - not close or separate draw changed ones  
& keep in position wash often  
& complexion. 1 defined from  
by morning - night cap -  
The sun. 2 Moisture - air in

Britain & Ireland - ditto here  
frequent washing the face  
& hands, esp<sup>y</sup> <sup>th</sup> in rain or  
snow water Job. "If I wash  
myself w<sup>th</sup> snow water & make  
~~myself~~ my hands never so clean"

3 good health. depends on  
moderate exercise <sup>walking</sup> & early  
country air - air of hills - Scotch  
rising & avoiding late parties.  
ladies -

- 4 moderate animal food not  
too high seasoned 5 light perfume  
on y<sup>e</sup> head of Dress. Above all avoid

5 Cosmetics - injure health &  
give a yellow color - made of  
metals - Perfumes - substitutes  
~~for cleanliness~~ - but - no small hurt  
6 innocence - purity of mind

If knowledge - ignorance has  
been called y<sup>e</sup> curse of God - gives  
a vacant eye, & face.



Dr Young

"Beauties of soul irradiate &c

Lect. 11.<sup>th</sup> -

of Aliments

we shall begin by enquiring  
into the final cause or seasons  
of the frequent returns of appetite.

- why sh<sup>d</sup> so much time be emp-  
loyed in this animal gratification?

- why were we not so formed as  
that <sup>by</sup> ~~sating~~ <sup>plentiful</sup> one ~~meal~~ meal in  
~~each day~~ sh<sup>d</sup> not be sufficient to  
support our bodies for a week - a  
month - or even a year? - Two  
seasons may probably be given  
~~for~~ why this is not the case,  
& why we are so dependant  
upon the elements that support

our bodies, as to require two  
or three meals a day to support  
them. -

It is essential to our happi-  
-ness that we sh<sup>d</sup>. retain a con-  
stant sense of our creator  
upon our minds. ~~This sense~~  
~~was~~ To preserve this sense  
at all times, our maker has  
kindly ~~rendered us~~ <sup>rendered us</sup> ~~implanted~~ dependant  
upon his bounty, & has, by  
the regular & daily returns  
of our Appetites, implanted  
a monitor in our bodies to  
prevent our forgetting him,  
& to remind us of the



Obligations of gratitude, and  
obedience which we owe to  
his good <sup>of providence</sup>ness. - The language,  
then <sup>in</sup> of every meal we set  
down is, - "When this you  
see" - Remember me"

2 A second use in <sup>of</sup> frequent  
return of our appetites is,  
they serve to promote conver-  
sation ~~by~~ & thereby to increase  
knowledge & social happiness,  
by bringing the members of  
a family - friends - and  
even strangers <sup>more frequently</sup> together for  
the <sup>company</sup> purposes of eating, and  
drinking.

I cannot help remembering  
a further instance of the divine  
goodness in connecting so much  
pleasure w<sup>th</sup> the employments  
of eating & drinking. Glad this  
satisfaction  
~~was~~ been left to reason,  
~~to~~ or to instruction, how  
often w<sup>d</sup> pleasure - business  
or indolence have rendered us  
dead to the necessities of our  
bodies - and how often would  
a perverse temper in a child  
have been the cause of its  
death - for if <sup>this</sup> <sup>was</sup> ~~a~~ child ~~that~~  
not ~~be~~ <sup>to eat</sup> impelled by the  
pleasure it derived from  
eating, it would be end



difficult to compel it to  
eat, as it is to make it learn  
its book. —

There is the same ~~harmony~~ <sup>relation</sup>  
between different Aliments &  
there is between diff<sup>t</sup> notes in  
music; — ~~the~~ <sup>the</sup> perfection  
of Cookery consists in finding  
~~them~~ out these relations. —

I am disposed to believe the  
<sup>of cookery</sup> Science is still in its infancy,  
& will remain so till it is  
rescued from the hands of <sup>practical</sup> Cooks,  
& made the Subject of philo-  
sophical experiments, and  
investigation. I believe there  
are pleasures to be enjoyed

in eating, ~~that we are as yet~~  
~~strangers to~~ - and that there  
are degrees of health, & long  
life to be derived from the pro-  
-per & harmonious mixture  
of aliments, that we are  
as yet strangers to. Perhaps  
discoveries upon this subject  
may be reserved for some of  
the female philosophers of  
this new world.

I shall briefly explain w.  
I mean by <sup>the</sup> harmony of Alim.  
by a few examples. -

~~Fish & fowl - the~~  
~~able as~~ Bread & meat -  
are related - & form a harmony  
when mixed together.



Bread & milk - Bread, and  
Butter - Meat & Salt - Salted  
& fresh meat - Mustard &  
cold beef - Cabbage & Vinegar -  
Mutton & turneps -  
Venison & Currant jelly -  
Pork & apple sauce -  
are ~~as~~ <sup>alike</sup> related to each  
other, & are alike grateful  
to the taste & <sup>alike</sup> healthy when  
taken into the Stomach.

Let us next mention a  
few instances of <sup>the</sup> want of  
harmony, or discord in Ali-  
-ments. -

Fish & flesh when mixed  
together - Bread & pudding -  
Sage & Salt - and Sugar -  
meat & Sweet Sauce - Butter

& Union - Bread & Onion - milk  
& fish -

are all contrary to each  
other, and disagreeable to  
the taste, & if they do not  
offend the Stomach, it is owing  
to its peculiar strength & health-  
ful State. -

The same observations  
apply to drinks. - There is the  
same harmony & discord in  
them when properly, or im-  
properly mixed together.

I shall add one or two remarks  
to this subject  
1. ~~and~~ The taste when pure is  
an infallible mark of wis-  
healthy in Aliment. It is true  
the Stomach often receives



with <sup>out</sup> rebelling aliments that  
are not grateful to the taste -  
But this is owing to its peculiar  
Strength. The taste & the stomach  
are naturally in Union with  
each other - and tho' the stomach  
may forbear long, yet it sooner  
or later accords <sup>th</sup> in the decisions  
of taste: E.g: Fish & flesh are  
unpleasant when mixed together  
in the mouth - But they ~~may~~  
may be taken in succession,  
<sup>th</sup> in impunity - This is owing  
to the stomach not <sup>giving</sup> ~~yet~~ an  
alarm <sup>like the taste</sup> upon the first violence  
being offered to it - But attend  
to the consequences of persons

Who have long mixed fish &  
flesh together in their stomachs.  
- They cannot digest them -  
hence we find - when they  
eat fish - they prefer eating  
nothing after it. -

2 - How shall we account  
for so many old people  
in high life in all countries?  
- we read of noblemen of 70-80  
& even 90 years of age who have  
feared sumptuously every  
day, and yet feel no incon-  
-venience from it? - Jas:  
- credit their health & long  
life entirely to their living



upon the best of food - mixed  
in a manner <sup>so</sup> as to be in <sup>form</sup>  
<sup>upon</sup> the faste & in  
perfect harmony & ~~renew~~  
the stomach. ~~very digestion~~ It is this agree-  
-able & harmonious mixture  
of Aliments that enables some  
persons to eat such large & <sup>frequent</sup>  
~~agreeable~~ meals without much  
or any inconvenience, & it is  
the want of this <sup>or proper mixture</sup> harmony I  
suppose that makes even the  
most wholesome Aliments,  
taken in the most moderate  
quantities produce diseases  
& ~~death~~ in many people.

- The Germans in this State  
are much afflicted with  
Stomach Complaints, owing to

These Aliments not being in  
Quantity  
Quantity - or mixture propor-  
- tioned to their constant la-  
- bor 3 useful in vegetables - blunts  
the appetite for excess of meat.  
of fermentation.

An intestine motion between  
dissimilar bodies, or dissimilar  
elements. all animal &  
vegetables bodies undergo it.

Three Stages - <sup>Wine</sup> Vinous - <sup>Vinegar</sup> Acetous.  
& putrefactive. -

For fermentation the  
following circumstances necessary  
1 heat of 80 to 100 degrees  
beyond too rapid. -

2 mixture - Sugar never  
ferments. -



3 Air - acc<sup>ess</sup> necessary

4 Rest, & in some cases ferments.

We shall ~~off~~ apply these principles  
every animal used in diet.  
as we go along. <sup>Animal food</sup>  
proper <sup>is</sup> comm<sup>and</sup>ed by God & infer<sup>red</sup> from  
Gen<sup>esis</sup>. 3 <sup>not</sup> what some mind w. Vegetables.  
Meats - wild - most easy of

digestion - heated by exercise - exp<sup>er</sup>  
chase - sooner ~~digests~~ <sup>tend</sup>  
to putrefaction - hence don't  
Inhuman practices  
bear long keeping - Bull bear-  
ing - & throwing at Lakes & r<sup>iver</sup>  
- substitutes for wild flesh. Legs of  
quadrupeds - & wings of <sup>wild</sup> birds  
from being most used hand<sup>ed</sup>  
of digestion. -

Domestic - flesh white - less  
savory - a grain w<sup>h</sup> gravel  
confinement helps to <sup>bathe</sup> them  
necessary - bear keeping - are  
tendered by it - more so if

1  
killed by electricity - legs less  
easy of digestion than wings -  
because more used - Ducks  
geese & pigs best eaten soon - oil  
<sup>rank</sup> young animals - proper in  
strong stomachs - abound w:  
murilage - <sup>full grown</sup> ~~old~~ easy of digestion  
+ Sanctonius's fast christ persp?

Beef & Mutton easier than  
<sup>best at 5 by years</sup> - Wales & Scott.  
veal or lamb - why? Mad.

DuRoienville taught me - the  
first from greater strength of  
teeth - Stomach the more ani-  
malized - veg. matter still  
present in veal & lamb. -

first diet of savages - ~~strong~~  
fish - The sooner eat after  
it comes out of the water the  
better - practice in Holland  
solid ~~and~~ food, requires good  
health to bear it. Pepper  
vinegar - soy - necessary w



it. hence the Africans all  
fond of high seasoning with  
it. Roast three times. -  
practice in Scotland a dram  
& It floats when boiled and  
sinks when boiled too much.

Oysters - abound <sup>in</sup> nourishment  
when best - roasts <sup>in</sup> fiction or y:  
best raw - or only heated &  
roasted in a pot. - Clams  
best in soup - strong & hard  
of digestion. Wilson's case.

Boiling  
~~Boiling~~ Roasting first invented.

Boiling - roasting - frying -  
Stewing - <sup>& baking</sup> - By boiling sudd:  
we retain the juices of the  
meat <sup>ch</sup> to are savoury & help  
digestion. -

Baking & frying - hardest & turns  $\frac{1}{2}$  oil  
rancid. -  
Boiling most simple - and  
if <sup>if</sup> keeps or juice used with  
easy of digestion - raw - or  
it which digests it! -  
well done <sup>best</sup> animal food? -  
the last - modern exp: <sup>by</sup>  
prove easiest of digestion.

Soups & Broths - very im-  
portant articles in housekeeping.  
"Take up  $\frac{1}{2}$  fragments that  
nothing may be lost" said our  
Saviour to his disciples. By  
making soups we comply  
<sup>the</sup> with this injunction. The foll:  
circumstances concur to  
recommend them: 1<sup>st</sup> Economy.  
<sup>required</sup> less meat & fragments on  
crusts of bread may by these  
means be saved from loss.



2 health - 3 a lively state  
of <sup>e</sup> mental powers - Sparta  
Scotland.

Soups Various - French  
their soup gros & maigre - the  
one w<sup>th</sup> & the other w<sup>th</sup> out meat -  
- Scotch - Barley broth & Hodge  
podge - all composed of meat  
& vegetables of diff<sup>r</sup> kinds, and  
in diff<sup>r</sup> proportions - sh<sup>d</sup>. be  
eaten before meat - afford much  
nourishment & prevent excess by  
blunting <sup>e</sup> appetite.

Improper in fevers - Very common  
preservation of fish & flesh  
1 by salt - 2<sup>nd</sup> by Sun-drying -  
- ling moisture - Indians  
sailors - 3 frost & hardening

in houses - with ~~the~~ <sup>the</sup> ~~the~~ <sup>the</sup>  
moisture - Canada - 4 by sugar  
& molasses 5 Exclusion of Air  
- sand - flour - 6 spoke =  
7 boiling - a peach - extracts juice  
Xams - running - <sup>white makes it ferment</sup> - curious

part of small & large quanti-  
-ty of salt on meat explained.

Sept 12<sup>th</sup>  
Condiments - what?

Salt - useful - helps digestion -  
Indians use ashes -

Vinegar - ditto - has some  
saccharine matter w<sup>h</sup> makes  
it nourishing. - pickels -  
Vinegar in solid form.

Pepper - ditto - in warm  
climates & by old people.



of milk-

Diff<sup>r</sup> kinds - a bounds <sup>th</sup> Sugar  
<sup>goats</sup>  
Cows milk

Reserved 1 By a cool Celler  
2 boiling it 3 depending it from  
the under by weights - iron -  
the concussion of the air  
only - as the horn be brewing  
prove.

<sup>12</sup>  
curds milk - yields cream  
coagulation or cheese &  
2 Butter - & 3 whey.

The 1<sup>st</sup> is of a Veg: Nature  
2 animal - hence milk  
Veg: & animal.  
<sup>cream first separ</sup>  
Butter made by ferment<sup>h</sup>  
of Cream - short time in

cool place -  
collecting it - Cleanliness  
hot water to clean be -  
Butter milk - consisting of  
Whey - &c - &c

Curd - Cheese - made by  
1 Rennet - what - 2 Wine.  
3 Vinegar. 4 molasses. 5 for  
flower of Antichoke - 6 fish.  
hence disagreement in stomach.

Rennet best - no taste -

Cheese - old best - Salt - col.  
<sup>a substance called</sup>  
by Annatto. ~~see~~

Whey - Sweet & wholesome

Eggs how preserved by  
oil - how known to be  
sound by the tongue. -



ch  
w part animal - <sup>most</sup> for  
easy of digestion - Madame  
Darcourville. Th<sup>d</sup>: not be cut  
hard. -  
Vegetables

By boiling - well boiled best  
except Cabbage - <sup>light</sup> like  
fish when boiled in - <sup>potatoes</sup> -  
potatoes kept from bursting by  
pouring cold water on the  
water that boils. preserved by  
cells -

Fruits  
Preserved - 1 by drying as  
cherries - &c 2 by baking  
as peaches 3 by sugar - 4  
by excluding air - as Grapes.

Herbs - by drying in the  
Shade. —

of sugar - from Sugar cane  
<sup>Leaf - how made -</sup>  
sugar tree - But cannot be  
1 nourish<sup>t</sup> 2 oil 3 mucilage

of Oil - Salt - & washing -  
wholesome - used by Ancient  
& Eastern Nations - Butter  
<sup>when fresh -</sup>  
better - mucilage makes it  
mix easier &c

of Water - excellent drink. Dr  
Fothergill's opinion of it  
Bread - lean<sup>d</sup> & unclean?  
Sarah's angels w<sup>th the</sup> first -



first dinner by a frugal woman  
Lead with sour doe of  
last baking 2 yeast wheat?  
how preserved - 4 Pyrmont  
water & fermented sugar &  
water. Bread preserved by  
triple baking - universal  
food - wholesome - corrects  
animal food - & prepares out saliva  
in chewing. - Venous form<sup>n</sup>.

Wine <sup>Do</sup> - acid - Spirit - Sugar  
&  $\nabla$  - nourishing in propor-  
- tion to sugar - White - Sweet  
& red. - keep best in propor<sup>n</sup>  
to spirit - Vaults for red -  
no weather medicine - or  
Sherry - best for over

Climate - ~~was~~ Lead used  
to sweeten red ~~white~~ wines  
- detected by solution of  
Opium in lime water.

finer - by milk <sup>Almonds</sup> - Eggs - Sand &  
white paper - how do they act.

Cyder - ~~was~~ rashed often -  
or strained thro' sand & tol -  
separates mulage - Pomona  
wine - how made -

Beer - from all grains -  
Barley best - nourishing -  
meat & drink - Porter best  
all Vinous fermenta<sup>n</sup>  
Vinegar - from sour wines  
- cyder - Beer - mother -  
& wine Stein - or if -



quished by a black bottle.

Spirits - distilled liquors  
in various state of firm<sup>n</sup>:

Brandy from wine - Rum  
Whisky - peach & apple do.

Liquors cooled - 1 by eva-  
-poration - Solutions of Salts  
not by rivers or sea - same  
temperature as air - Fusion  
by book -

Teas - same herb - the  
fragrant taste from herb  
Opium - <sup>sh<sup>d</sup> be taken weakly</sup> Herbs -  
Flaxseed - & Bran common

in all families - how  
made -

Chocolate Shells best for  
weak Stomach & indolent  
people - oil heavy.

Coffea - how cleaned -  
Eggs - codfish skin & ~~spring~~  
with this. Ladies I beg  
leave to close the present  
course of lectures. I have  
only to lament that the  
short time allowed for  
them has ~~now~~ rendered  
them necessarily <sup>very</sup> ~~so~~ ~~super-~~  
~~ficial~~ and at the same

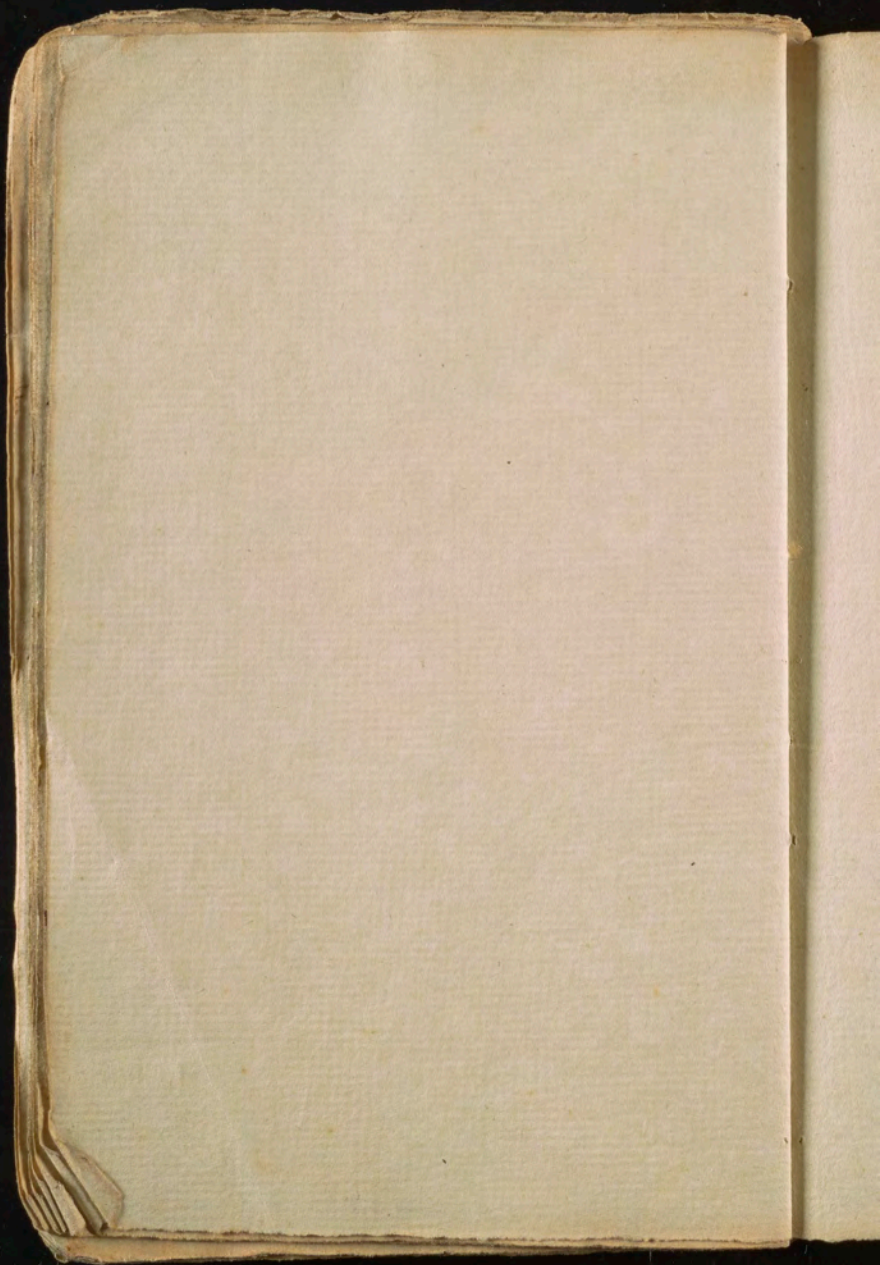


I have given you a few  
hints which will enable  
you to pursue your inquiries  
upon these subjects with  
ease & pleasure. ~~As~~ From  
the improvements you have  
already made, ~~it~~ I flatter  
myself you will become  
philosophical as well as  
practical housekeepers,  
and that you will be able  
to ~~derive~~ derive instruction  
as well as pleasure hereafter  
from the ordinary duties

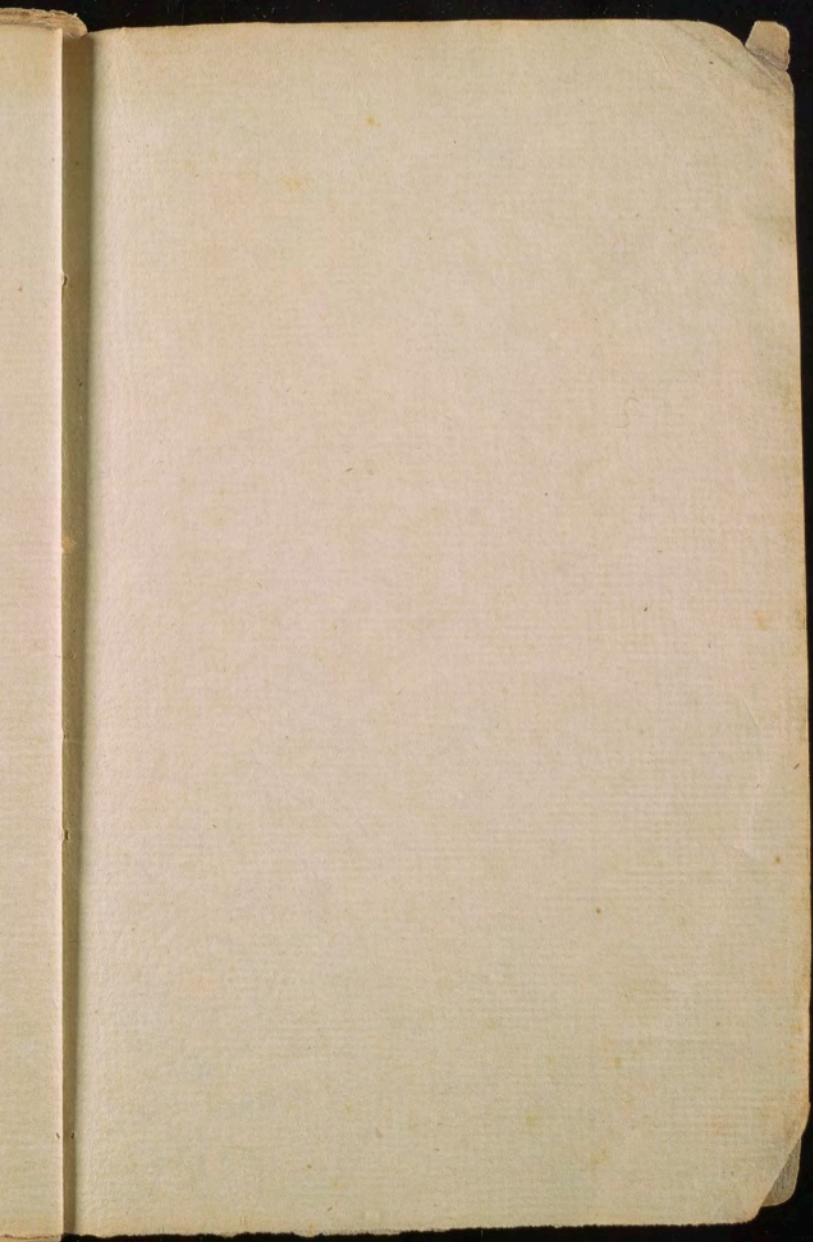
of domestic life. Accept  
of my thanks for the polite  
attention with which  
you have been pleased to  
honour these lectures, &  
of my best wishes for  
your future happiness,  
& prosperity.  
~~in all the~~

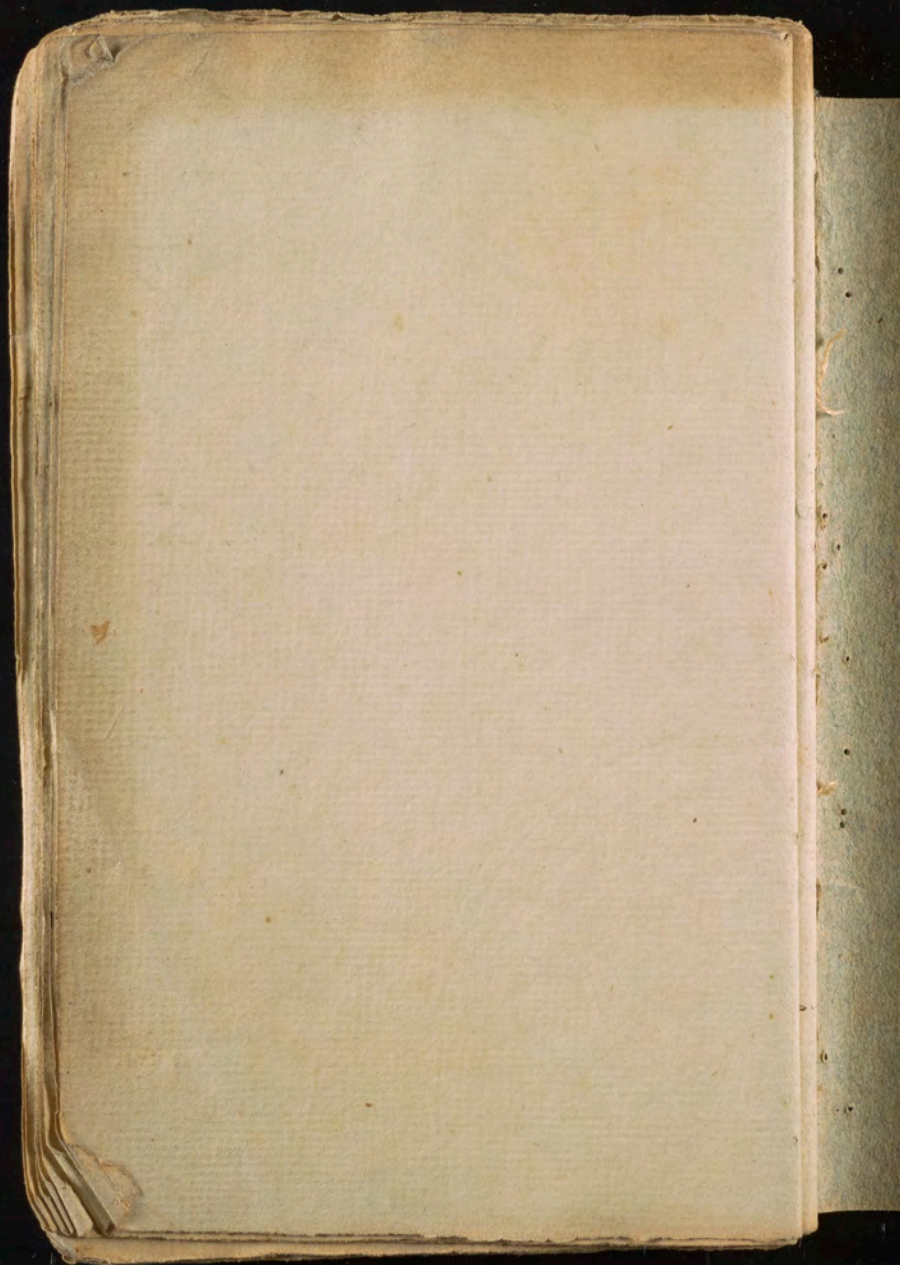


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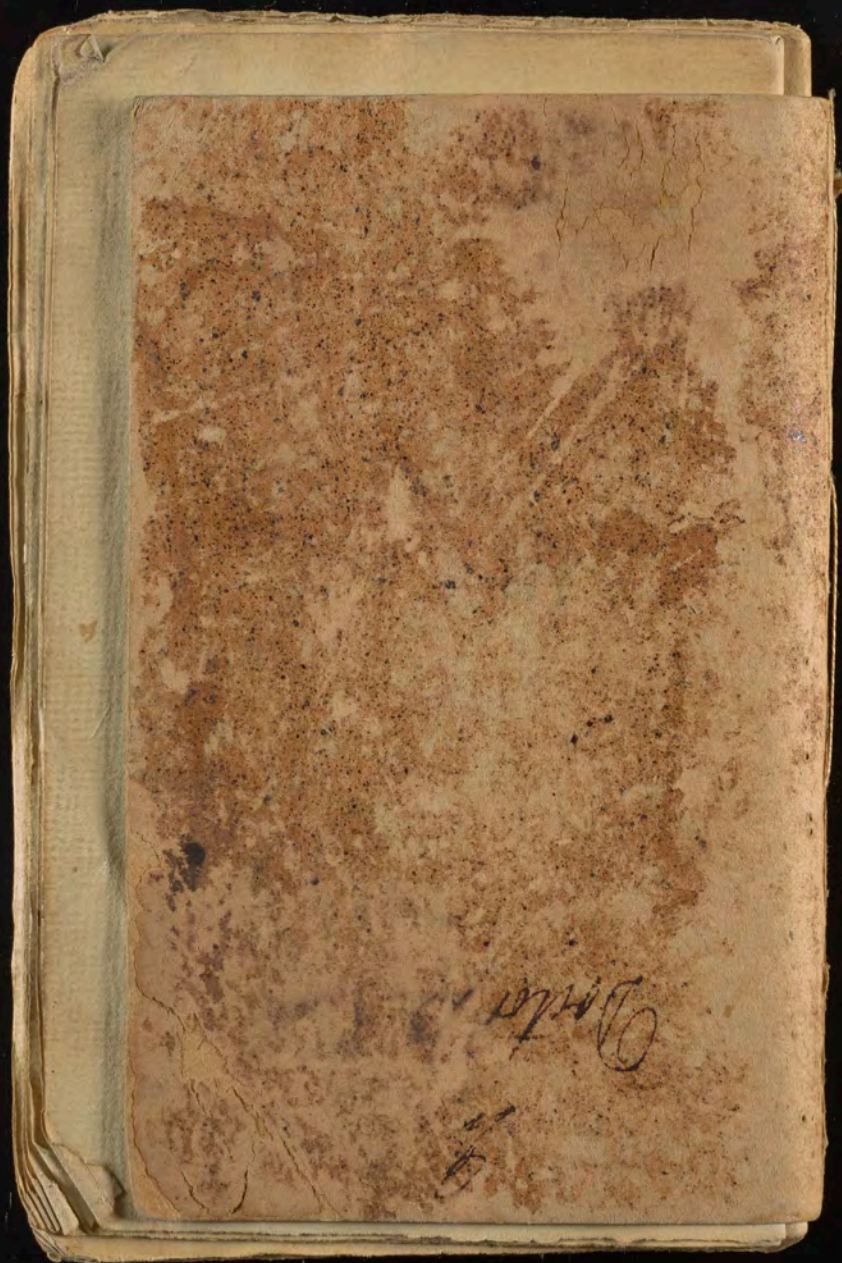








Stony Brook  
L





1.  
FOR THE  
YOUNG LADIES' ACADEMY,

Near St. Paul's Church, in Third Street, Philadelphia.

Y 12

7395

F 12

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—PROV. iv. 1, 7, 8, 9.  
If sinners entice thee, consent thou not.—PROV. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE'S Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Miss MORE'S Essays.*

If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time. Pleasant, indeed, are all the paths which lead to solid and elegant literature. Yours, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures. Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value. Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education are, perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—KNOX.



# SYLLABUS

## OF LECTURES,

CONTAINING THE APPLICATION OF THE PRINCIPLES OF NATURAL PHILOSOPHY, AND CHEMISTRY, TO DOMESTIC AND CULINARY PURPOSES.

COMPOSED FOR THE USE OF THE  
YOUNG LADIES' ACADEMY,

IN

P H I L A D E L P H I A.

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P H I L A D E L P H I A:

PRINTED FOR ANDREW BROWN, PRINCIPAL OF THE  
SAID ACADEMY,  
M,DCC,LXXXVII.



The Application  
of the  
Principles of Natural Philosophy, ~~and~~  
Chemistry, <sup>and medicine</sup> to domestic, and culinary purposes.

Composed for the use of  
The Young Ladies' Academy,  
in  
Philadelphia.

By Benjamin Rush M.D. and Professor  
of Chemistry in the University of Penn-  
sylvania —

And,  
Read, by him, in a course of Lectures,  
to the  
Young Ladies of the first class,  
in

October 1787. —



INTRODUCTORY remarks, on the effects of heat and mixture, and on the different objects of Chemistry.

Of Salts.

Of Earths.

Of Inflammable Bodies.

Of Metals.

Of Waters.

Of Airs.

*& Situation*

Of the direction of a house.

Of the usual materials for building houses.

Of the means of rendering a house cool in summer and warm in winter. <sup>+</sup>

*of the means of existing heat &c*  
Of Fire-places—Stoves—and Fuel. <sup>+</sup>

Of the causes, and remedies, of smoky chimnies.

Of Cellars, and Vaults.

*- a garden - stable  
not unhealthy - horse & cow &c  
+ Hole a few feet deep in a cellar  
excellent. -*

*... boys making.*

*or more  
+ two of the Laws of heat.*

*first. - # Cold Shower bath (a)*

*# Here in inflammable  
bodies.*

*(as directions when I have  
to use it under means of  
preserving female beauty. -*



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of the  
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Of the preservation of the wood and walls of a house.

+ washing - Of rendering a house clean and wholesome. +  
 Danger from Of preventing and destroying such insects and noxious animals as infest houses.  
 setting in it  
 afterwards Of the means of defending houses from lightning.

ashes put Of Kitchens, Ice-houses, &c.

out fire. Peire OF DRESS.  
 mention its vol. 3: p. 88 + vol. 1 in Dress  
 Of Woollen, Cotton, Silk, and Linen cloaths. 1st Vol. 2

Advantages.

## OF FURNITURE.

Of Plate.

Of Iron, Pewter, Tin, Copper, and Brass vessels.

+ 460  
 ring - Of China, Glass, and Earthen ware.

Of Looking-Glasses, Pictures, Prints, and Busts.

Of Beds, Sheets, and Blankets; and of the means of preserving them, &c.

+ discharging Of Washing, Bleaching, and Ironing.

fixed air Of Soap, Starch, Blue, and Dyes.

from Shells. Of Clocks, and Jacks.

Of Lamps, and Candles. x Asbestos -

Of Pens, Ink, and Paper. matches + phosphorus

to lime - burn  
 flower oil good.

to use it under means of  
 preserving female beauty.

Of Books.

Of Thermometers.

Of the Barometer. - Lobau

Of the means of preserving Female Beauty.

of cash of 0 of air as connected  
 OF ALIMENTS. to health.

Of the final cause of the frequent returns of appetite for food.

Of the harmony between the different kinds of aliment, and its influence upon health and pleasure.

of time of eating. of Sleep  
 OF FERMENTATION. + fixed air

Of Meats, wild, and domestic, young, and old.

Of Fish.

Of the different methods of cooking animal food.

Of Soups and Broths.

Of the preservation of fish and flesh.

## OF CONDIMENTS.

+ Nitre - making of nitre  
 + Of Salt, Vinegar, Pepper, &c.

Of Milk.

Of Cream, Butter, Cheese, and Whey.

Of Eggs. + + kept sweet by Dr

+ prevents worms +

+ known to be good by transport.  
 2 large end warm 3 by sinking.



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## OF VEGETABLES.

Of the means of preparing them for food.

Of the means of preserving them

Beans - Chinese & meth<sup>of using</sup> them.

OF FRUITS. &amp; pleasant - ag.

Of the means of preserving them. bile &amp; worms.

Of the means of preserving herbs.

Nuts - Chestnuts how preserved.

Of Sugar. &amp; see Williams letter.

Of Oils. - Pearse preserved in  
Cask lined with tin foil.

Of Water. &amp; mineral &amp;c

Of Bread.

Of Wine. - Sal G. - useful to low  
wines.

Of Cider. - Pomona wine

Of Beer. - Mr Belknap's recipe.

Of Vinegar.

Of Spirits. - composition & danger  
Tobacco - from use.

Of the methods of cooling liquors. &amp; recipe from

Of Teas, Coffee, Chocolate, &c. surgeon's  
hair -Trifling Disorders in W & D are  
not consulted. as wants - ring

Worms - Whitloe - corns -

Sore eyes - Maller's eye  
& Calam. oint<sup>water</sup> also

to preserve female beauty. -

Horse & Cow - how to  
be treated - a Garden Sec

produs Dyspepsia.

& use in diet - scale of D. - tried  
with pigs - regrows in w. & D. -

plague not known where used.

- Lament being denied from

lab<sup>of regrows</sup> - might be hadfrom maple tree - Best - (auth<sup>the</sup>refinement<sup>of</sup> of Sugar - use in

preventing Worms.

the effects of cold water &amp;c

Drink - copy from humane

Society's pub<sup>h</sup> -



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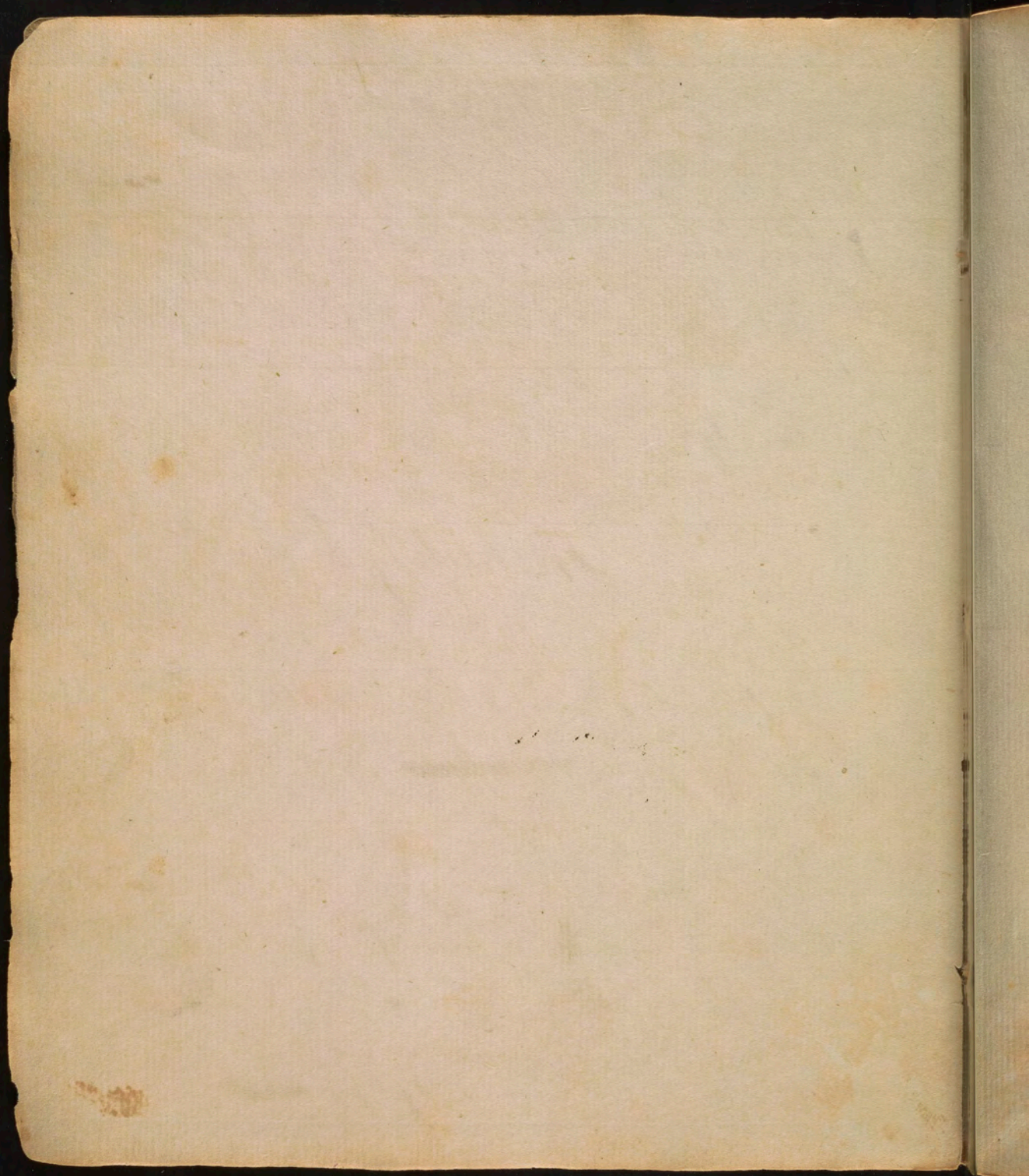
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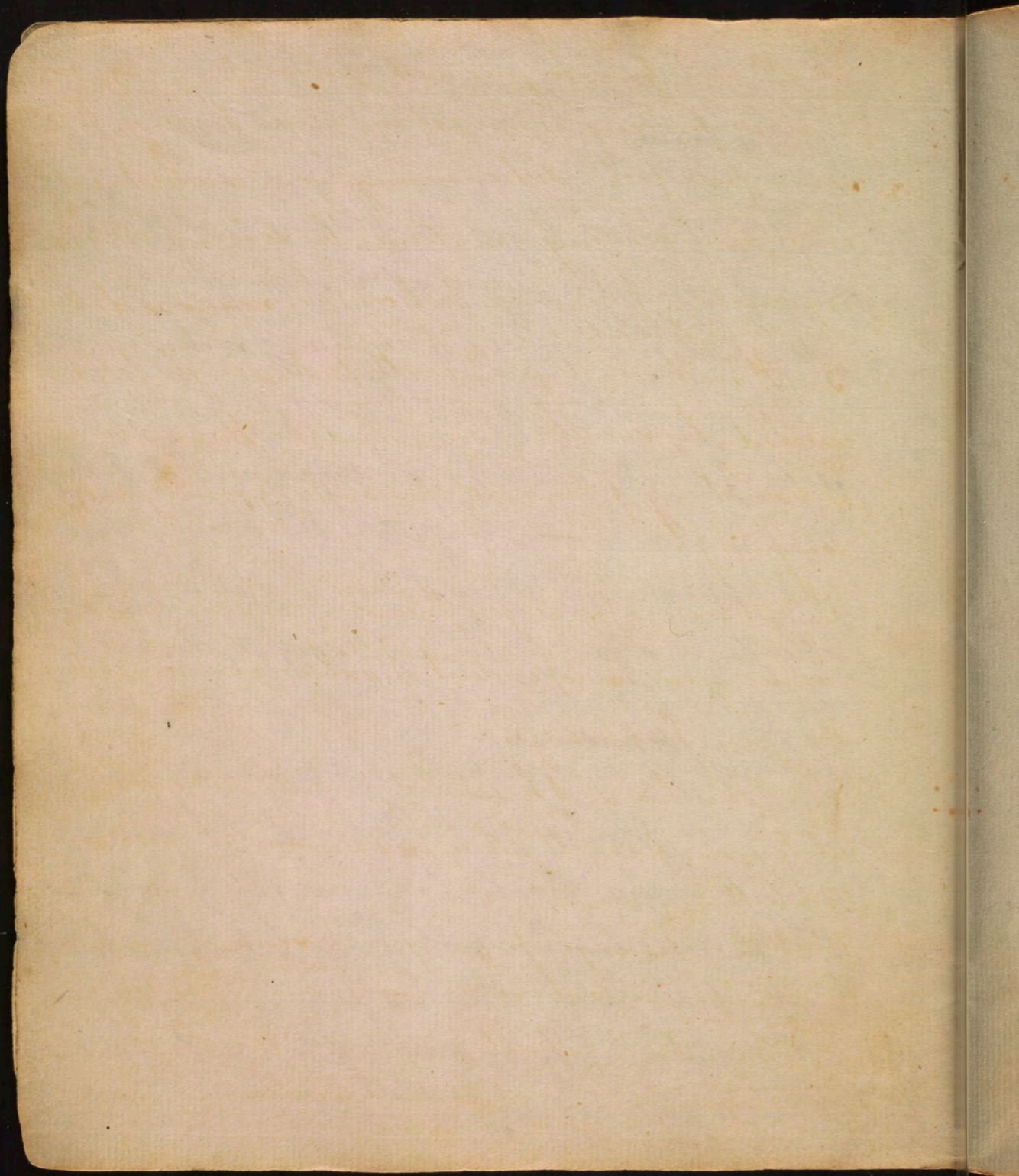
## Introductory address.

Young ladies,

The last time I had the pleasure of addressing some of you, I endeavoured to shew you the folly, and impropriety, of acquiring such accomplishments as were not accommodated to the present state of society, manners, and government, of the United States. — To supply the place of these accomplishments, I beg leave to offer to your attention a few plain, and simple, remarks upon such parts of Natural Philosophy, and Chemistry, <sup>& medicine</sup> as are applicable to domestic, and culinary, purposes. This kind of knowledge will be useful to you in a variety of ways. —

1<sup>st</sup> It will excite a taste for such books as treat more fully upon these subjects, and raise you above the necessity of stooping to novels, and romances, for <sup>past</sup> entertainment.







2.<sup>d</sup> It will furnish you with subjects for rational and improving conversation, and, thereby, preserve you from dishonouring your understandings, and wasting your time, by deriving all your conversation from dress, fashions, or ~~scandalous~~ less innocent subjects. —

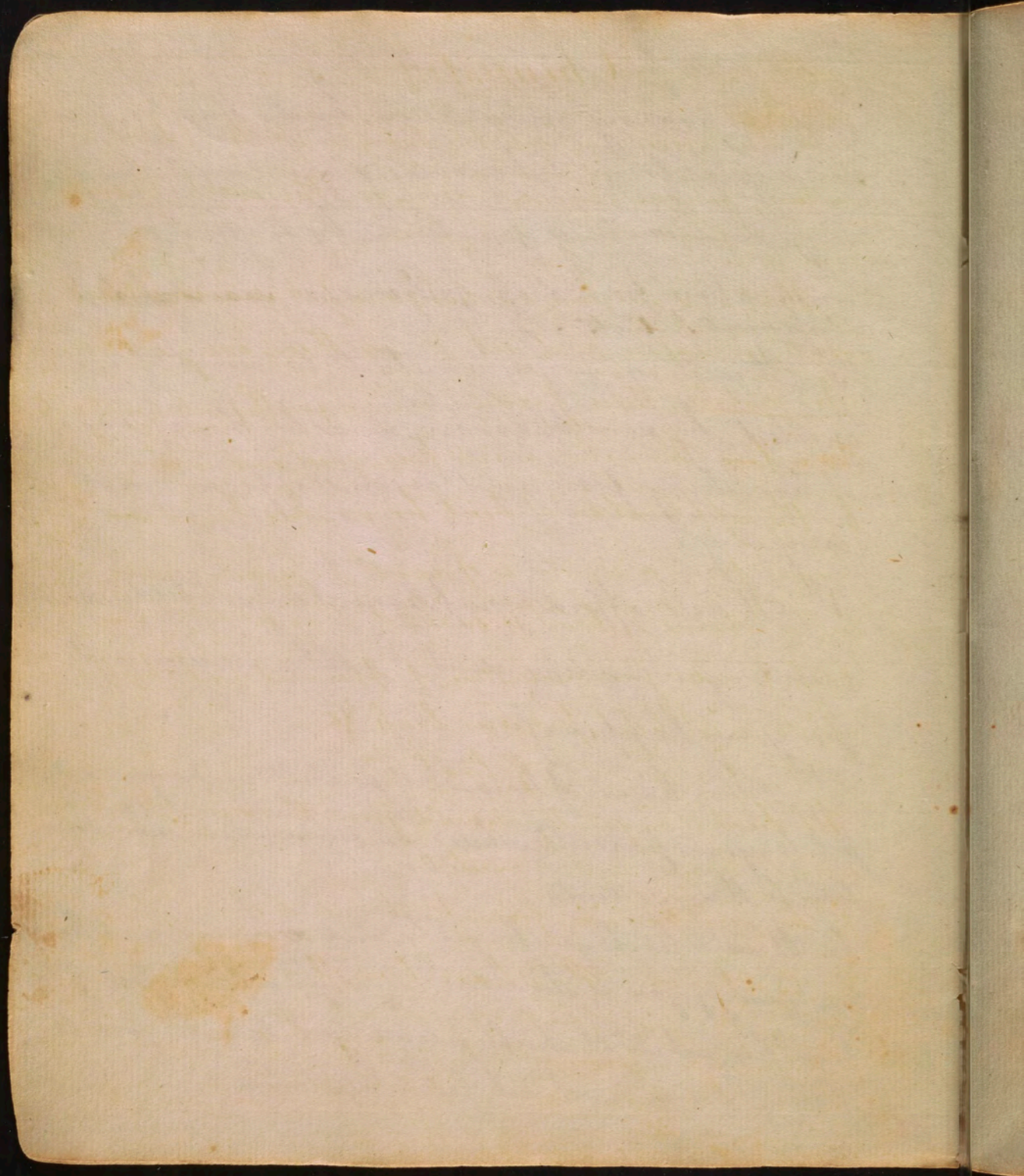
3.<sup>d</sup> It will cause your society to be sought for, and courted, by sensible men, and be the means of banishing fools, and coxcombs, from your company.

4.<sup>th</sup> It will afford you pleasure in solitude, and render you independent of public amusements for your happiness.

5.<sup>th</sup> This kind of knowledge will make you useful to your parents while you remain in subordination to them. And,

6. It will teach you frugality, and economy, and, thereby, qualify you to shine as wives, <sup>mothers,</sup> and mistresses, of families, when it shall please God to call you to fill those important, female, stations.







# Chemistry

Is that science which teaches the effects of heat, and mixture, for our improvement, in the works of nature and art.

Heat, and mixture, are two powerful, and universal agents, in nature, and art. We see them every where.

In nature, these produce rain, earthquakes, meteors &c.

In art — The baker mixes flour, yeast, and water, which, by the application of heat, he makes bread — The brewer from a mixture of malt, hops, and water, with the assistance of heat, is enabled to make beer. — The brass-founder from a mixture, of copper and zinc, by the assistance of heat, procures brass. &c.

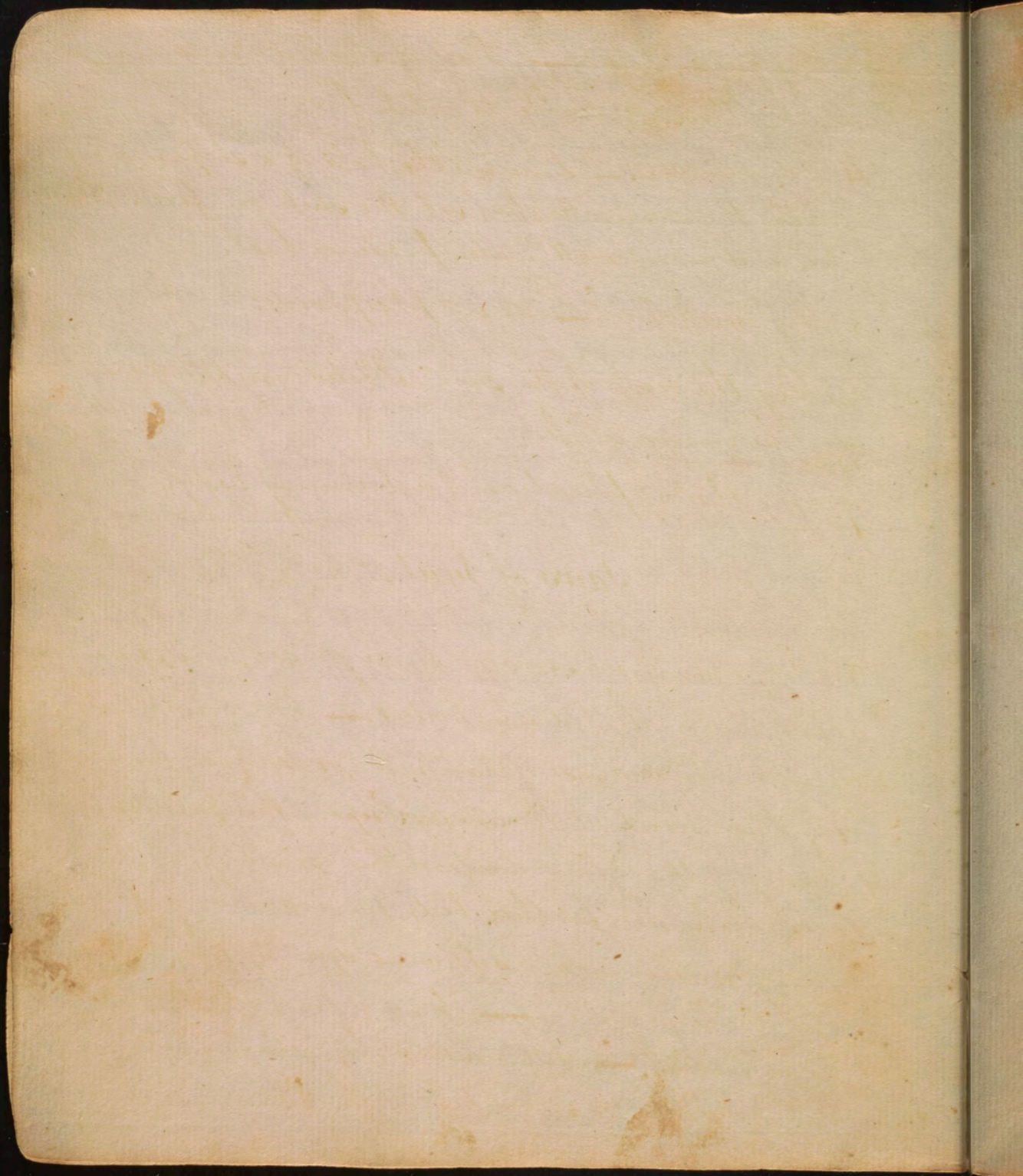
## Of heat.

All heat is originally derived from the sun. It is lodged in all bodies, and is excited,

1.<sup>st</sup> By percussion — as from flint and steel.

2. By friction. There have been flames produced by the rubbing of the wheels of a cart against the axle-tree. The Indians, frequently, kindle fires by rubbing two sticks together.







3. By fermentation. — Hay, if stacked too green, ferments, and is liable to catch fire.
4. By mixture. — Lime in the hold of a ship, mixing with the sea-water, has set the ship on fire. Nitrolic acid, mixed with water, produces heat.
5. By access of air, — as in phosphorus.
6. By the rays of the sun, collected in the focus of a burning-glass.
7. By the application of a burning body.

### Laws of heat.

1. It passes more slowly through soft, and spongy, bodies than thro' dense bodies — hence woollen cloaths are warmer than silk, or linen, by retaining the heat of the body: upon this principle many of the Germans, in this country, in the winter season, use feather beds for a covering; for these, being much more soft, and spongy, than blankets, are also warmer: — hence eider-down coverlets are so useful: — hence snow, by retaining the heat of the earth, is so useful to the farmer in cold coun-



ha

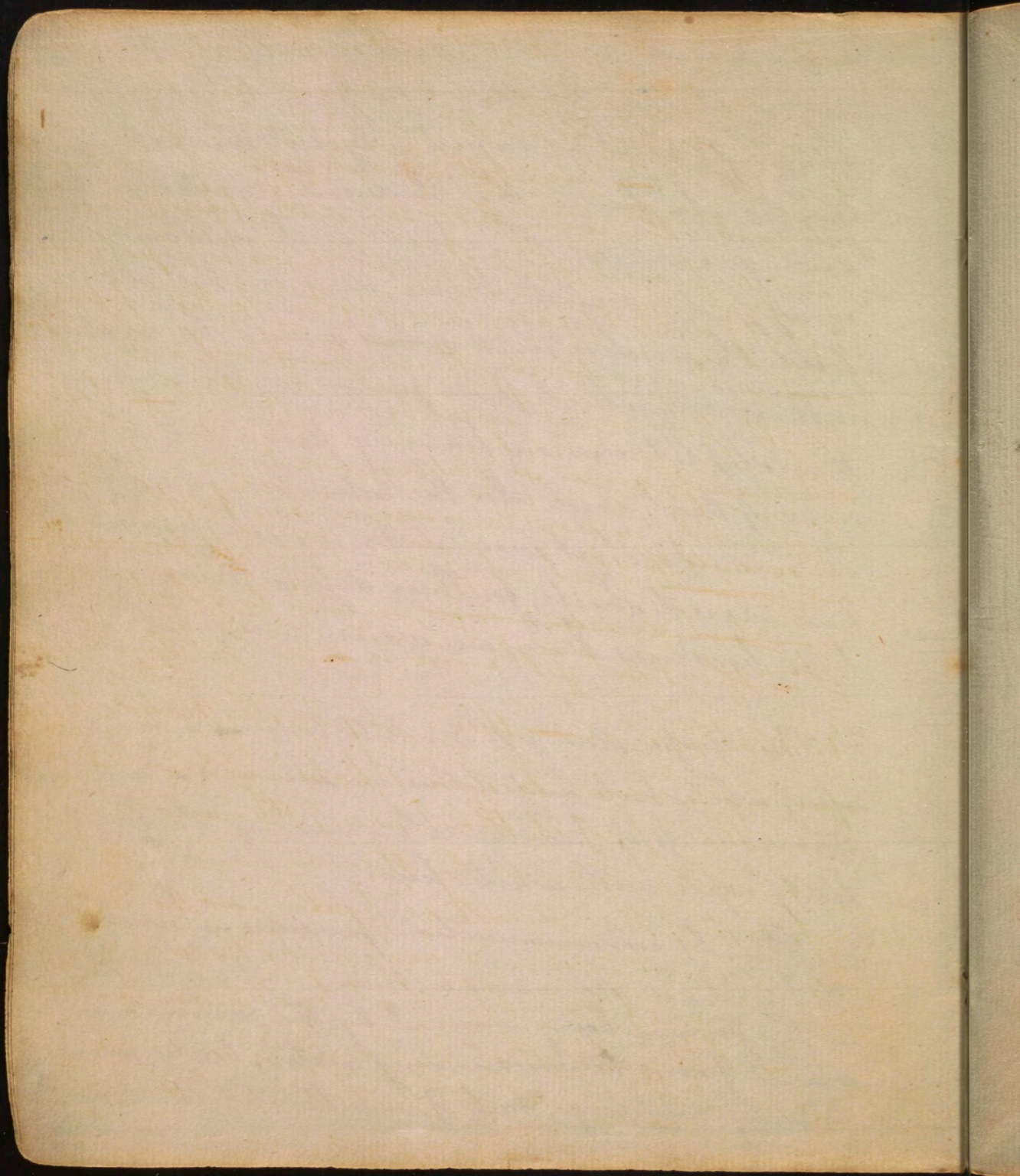


countries and promotes verdure early in the spring  
may, so effectually does it confine the heat of the  
ground, that a rapid vegetation takes place  
under it - hence, the Indians <sup>have</sup> sometimes lain  
down to sleep, in the woods, with a blanket  
wrapped round them, and in the morning  
have found themselves in a ~~wet~~ sweat, tho' covered  
with snow, which had fallen, in the night, while  
they slept; the snow having prevented the es-  
cape of heat, and also the admission of cold: -  
hence, also, that wool, with which providence  
has covered sheep, for their defence, in cold coun-  
tries, becomes hair, in warm ones.

2. Heat passes slowly thro' white bodies - hence the  
use of white hats and clothes in summer - and hence,  
the goodness of Providence in covering the heads of  
old people with white hair.

3. Heat, by communication, produces an equilibrium.  
Hence, islands are warmer than continents, the air  
in the former being warmed by the communication  
of heat from the surrounding waters; besides, winds  
blowing over large tracts of uncultivated land, in the  
latter



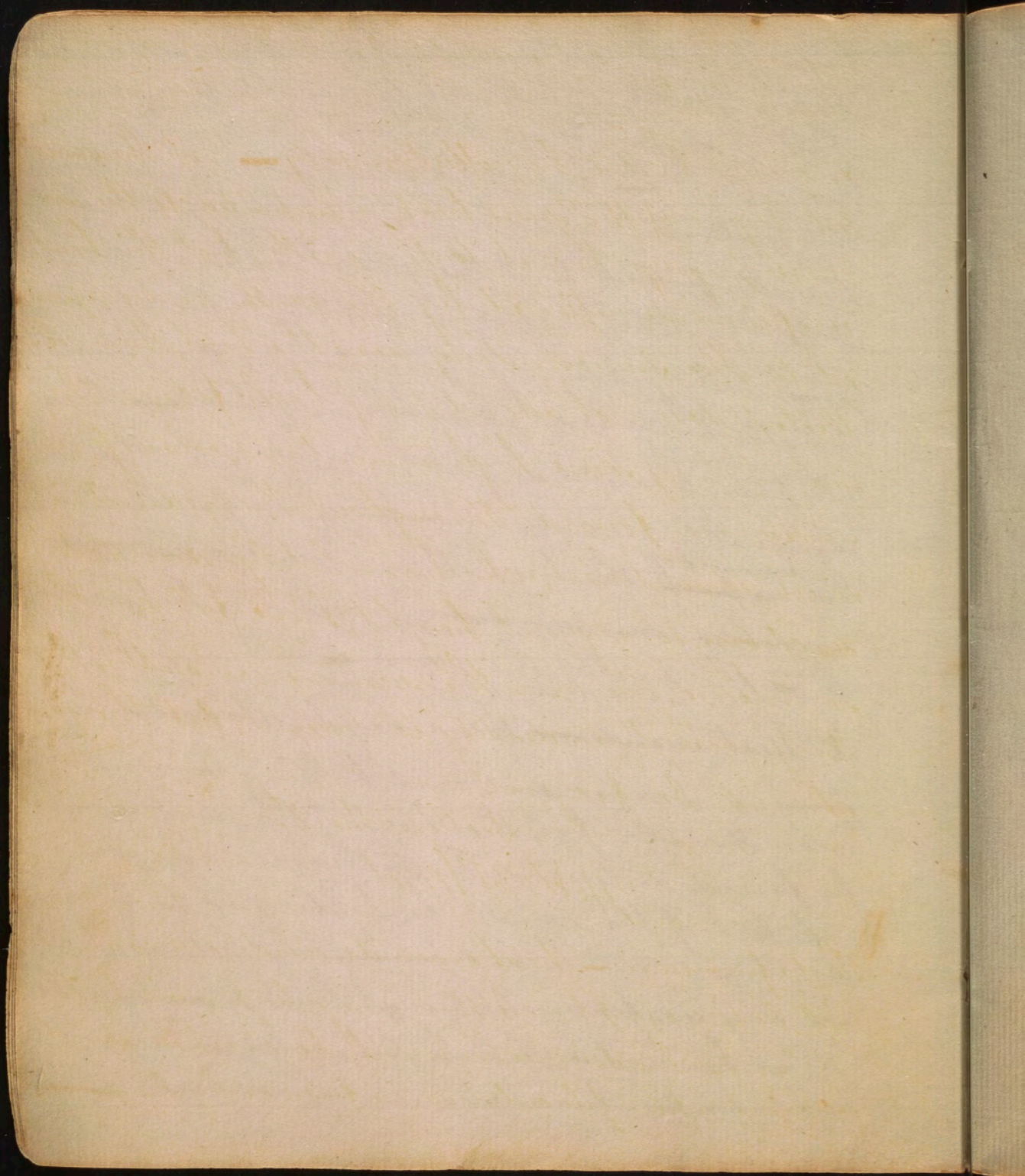




latter, produce cold— hence it is, that orchards on the banks of lakes, or rivers, are less liable to be injured by frost, in spring, than those which are more remote from them.— hence, if a frozen apple &c. be thrown into water, the warmth of the water (for it will be hereafter proved that the coldest water is possessed of heat) will be communicated to the apple, <sup>it</sup> and will gradually thaw the frost, and at length produce an equilibrium of heat.— hence, also, damp air is so cold in winter, and so disagreeably warm in summer; for, this damp air <sup>conducts off</sup> the heat of our bodies to the colder air ~~in which~~ <sup>in which</sup> ~~surrounds us~~, in winter, but, imparts <sup>to them</sup> the heat of the warm air in summer.

4. Heat ascends— this may be illustrated by opening a room-door, and holding a candle near the top of it; the blaze of the candle will be forced outwards, by the warm air, going out; but, if the candle be held near the bottom, the blaze will be turned inwards, by the cool air, coming in; for air like heat tends to an equilibrium— hence it is that taylor's in Germany sit high; and the French sleep in beds raised so high that they







they are under the necessity of ascending to them on chairs &c.

5. Air is heated by reflection only — not the smallest degree of the sun's heat is imparted to the air in its passage thro' it to the earth; but, this heat is afterwards reflected by the earth, and imparted to the surrounding air; the heat, thus reflected, does not ascend very high; for, on the summits of some high mountains, coldness, and snow, are found throughout the year; and some adventurers, who have lately ascended, in balloons, to a great height, have felt the cold so intense, even in the summer months, that they were <sup>obliged</sup> immediately to descend, lest they should be frozen.

Lecture the 2.<sup>d</sup>

### Effects of heat.

1.<sup>st</sup> Expansion — heat expands, and cold contracts all bodies, except ice; this may be proved by the air in a bladder which will be rarified, and expand when placed near a fire; or by the ~~mercury~~ mer.



of the

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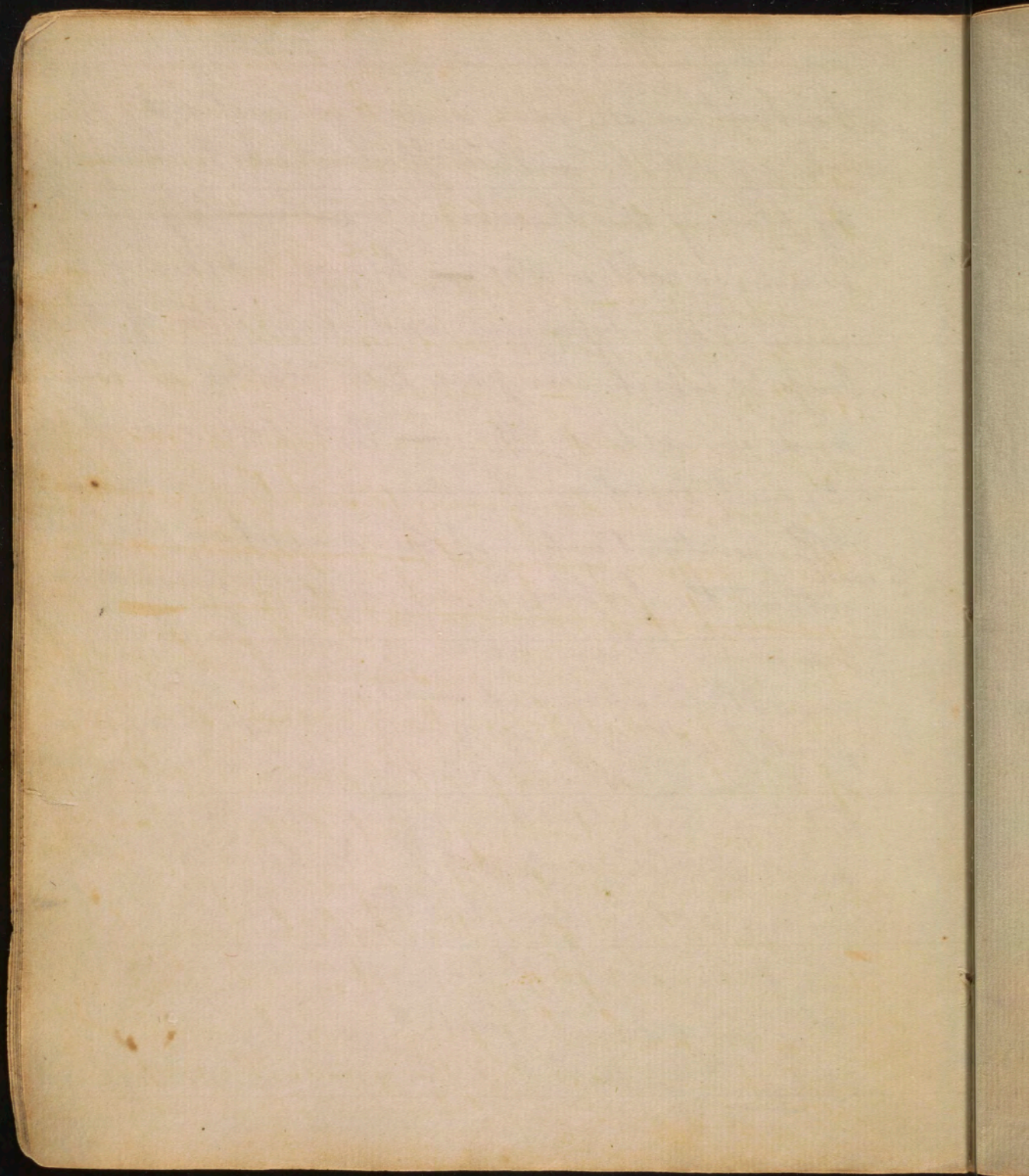


mercury in a thermometer which expands, with the heat, in summer, and is contracted, by the cold, in winter — these effects may be produced by placing the thermometer ~~in the water~~, in warm, or cold, water — hence, clocks vary, because of the expansion, and contraction, of the brass &c. which compose their works, in warm and in cold weather — Iron bolts are affected by heat & cold, in the same manner —

The constant action of the sun, upon that part of the earth within the tropics, is supposed to have expanded it there; which accounts for its being an oblate spheroid — If red hot iron be applied hastily, to a drop of water, or to a spittle, upon a smith's anvil, <sup>the</sup> expansion will be so great, that an immediate explosion will take place — Water expands when turned into ice — hence, ice bursts bottles, conduit-pipes &c. — hence, also, its use in crumbling, and fertilizing, the ground — and, hence its effects, in crumbling, and throwing down, houses.

2. Fluidity — all bodies may be rendered fluid by







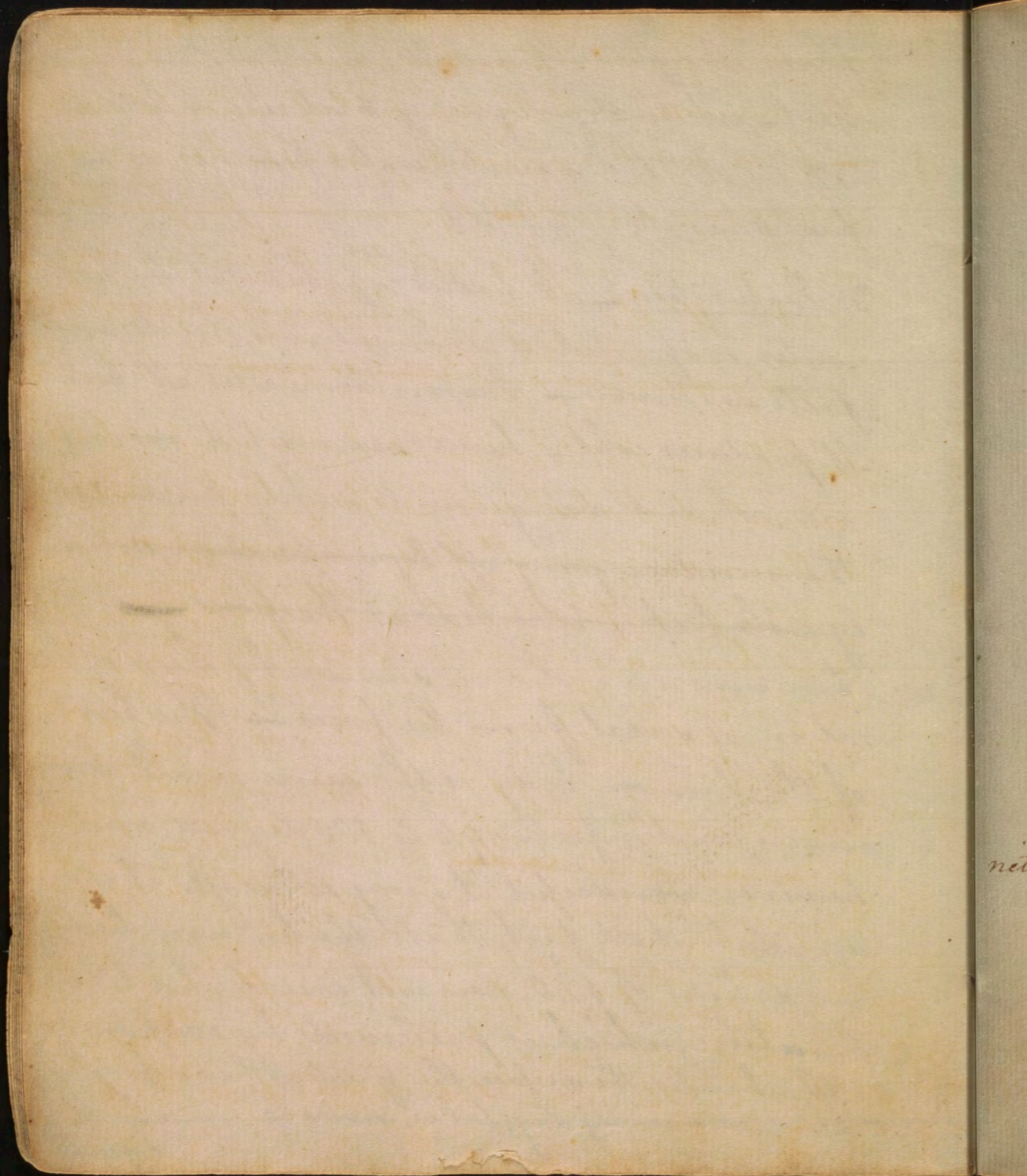
heat— the fluidity of water is entirely owing to heat— when the degrees of heat are so low as  $32^{\circ}$ , by the thermometer, water becomes ice— fire is necessary at  $62^{\circ}$ .

3. Evaporation— all bodies <sup>are</sup> capable of it by heat— water, evaporated, is condensed into clouds, and falls in rain— Evaporation wastes all bodies— it produces cold— hence new-washed rooms are cool, and dangerous to sickly persons; ~~for the moisture, going off by evaporation, not only cools, but is imbibed at the pores—~~

hence we are cooled in summer by the evaporation of sweat from the pores— The heat of the human body is the same in all climates, and is from  $96$  to  $100$  degrees; and however wonderful it may seem, yet it is an established fact, that the human body, in a heat of  $120$ , does not exceed this temperature, which is preserved by evaporation.

The broader the surface the greater the evaporation— hence, on a windy day, lakes, rivers &c. undergo a greater





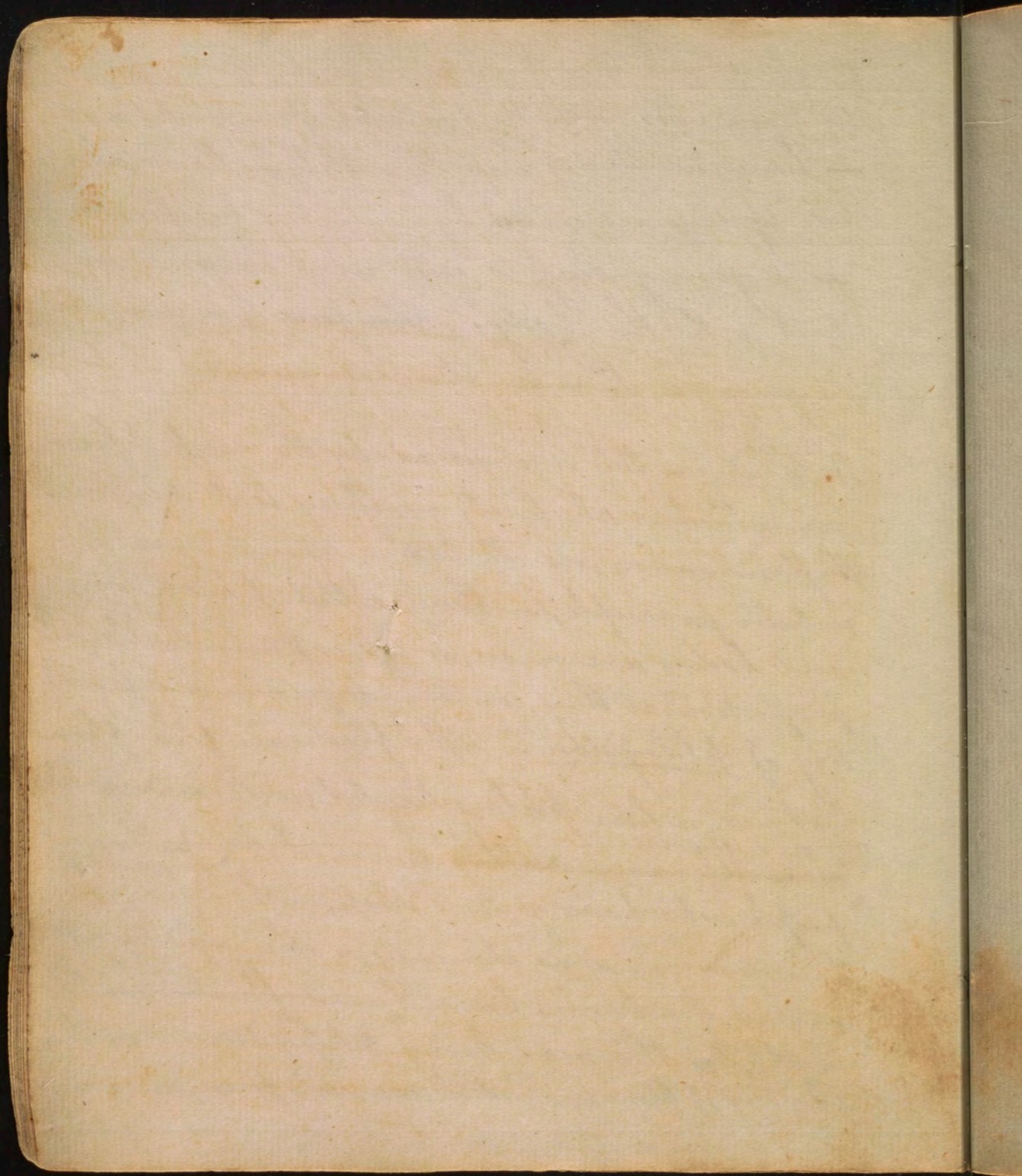


greater evaporation than on a calm one. Evaporation increases with the removal of evaporated matter — hence, winds dry roads &c. quickly — hence, also, windy days are coldest, by removing perspiration, and giving access to cold air to come in contact with the body. The force of evaporation is very great, as in steam engines.

4. Flame — this is occasioned by the access of fresh air, which is absolutely necessary to its existence. Inflammation, in all bodies, depends upon a certain principle, in them, called phlogiston; and bodies are more, or less, inflammable, in proportion as they contain a greater, or less, quantity of phlogiston. Tho' fresh air feeds flame; yet, air, when phlogisticated, will ~~extinguish~~ neither feed flame nor support <sup>animal life</sup> — hence, <sup>of charcoal &c.</sup> people who have gone to sleep, with a fire in their room, and no chimney, or other aperture, to admit fresh air, have been suffocated, in the night, by the air's being phlogisticated. — The moving of flame, and its conical form, are owing to the action of air on it.

Foot —







Soot, in chimneys, is produced by vegetable matter, incompletely consumed, by slow fires—hence, it contains much phlogiston, and easily catches fire.

Heat has the most salutary effects in every part of the creation; withdraw it, and vegetables immediately disrobe themselves of all their gay and fragrant flowers leaves &c. No heat are all animals indebted for their existence—so well are the people of Egypt (and, lately, some nations of Europe) apprized of this, that they have contrived a method of producing chickens, in thousands; not by incubation, but by an artificial heat, imparted to the eggs, in ovens curiously constructed, for that purpose. Several insects become torpid, when heat is withdrawn, and are revived, only, by the return of its cheering influence.

It has been happily proportioned by the great Creator of the universe to answer every purpose intended by his goodness—too much would expand all fluids—hence rivers would overflow  
their



A solution of ice, and oil of vitriol, is much colder  
than ice alone = A solution of snow and salt,  
is extremely cold - hence, heat is lodged in  
ice, and in snow.



their banks &c - it would also dissolve solid bodies, as earths - Too little - all nature would be held in icy chains; and our globe present the awful phenomenon of another chaos

### Lecture 3.<sup>d</sup>

On mixture - This is threefold -

1. Mixture properly so called, is when two bodies are united, and produce heat, as vitriolic acid and water.

2. Solution - is when two, or more, bodies are united, producing cold - a solution of water, and common salt, is colder than the water alone; by adding a little nitre, the solution will become still colder. Experiments may, here, be made, with a thermometer.

3. Diffusion - is, when two bodies, as oil, and water, are united by agitation - this union always ceases with the agitation, which produced it.

### Decomposition.

As ~~there is no~~ <sup>every</sup> body ~~which~~ has ~~not~~ some affinity to, and is capable of being united with, some



+ see Bergman's table printed by  
Mr Poulson -



some other; so, the union of any two <sup>Fig</sup> bodies may be dissolved, by the addition of a third, which has a greater affinity, to one of those, than that with which it was united — and this is called decomposition or elective attraction.

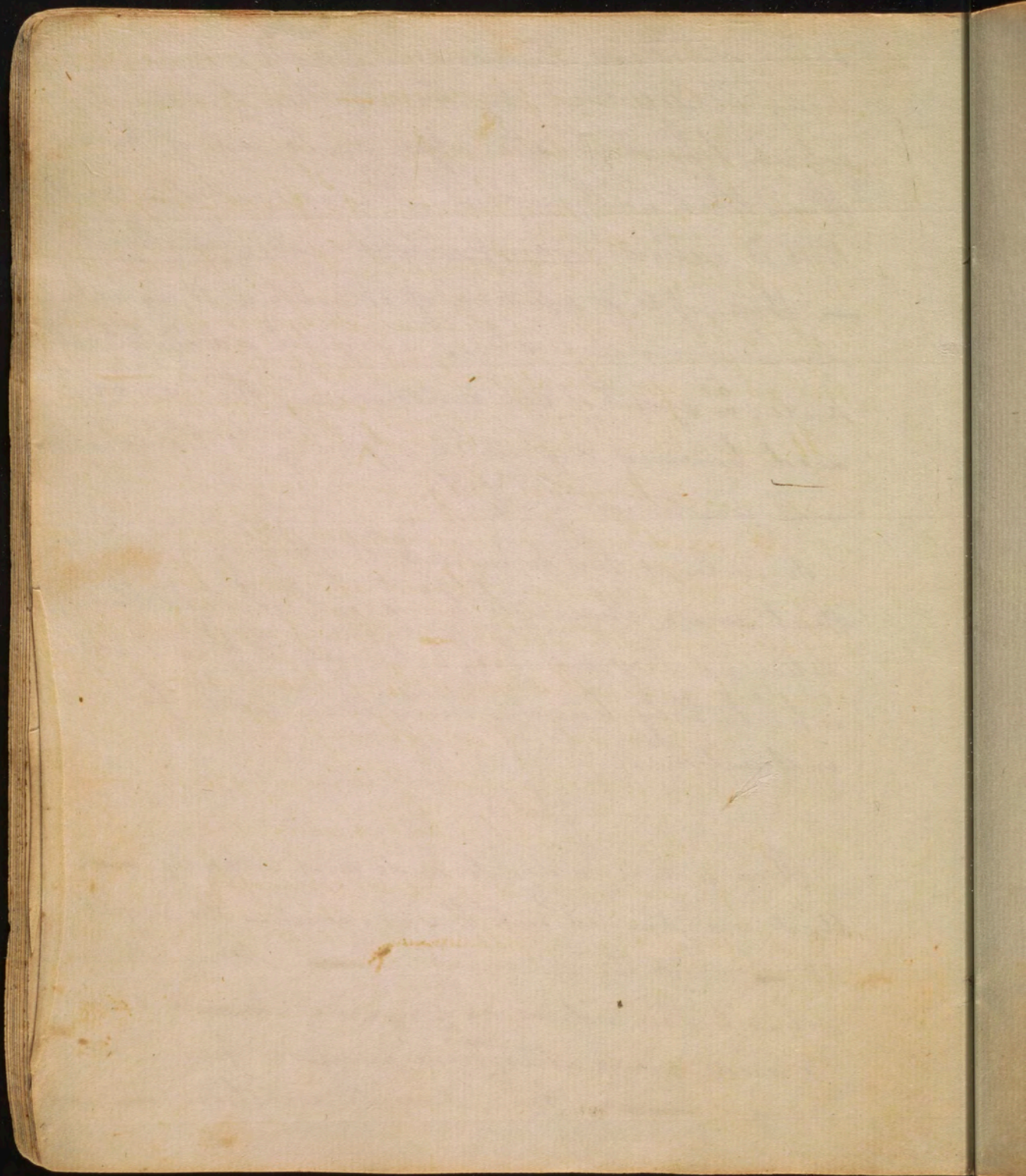
— thus, if to a solution of marble dust, in vitriolic acid, and water, we add a volatile alkali, <sup>or</sup> spirit of sal ammoniac, the vitriolic acid having a greater affinity to the vol. alk. will unite with it &c.

So well is this principle of affinity understood, that some chemists have calculated the different degrees of it, between different bodies, which they have arranged in tables for our instruction.

### Salts.

These are divided into acids and alkalies — Acids are divided into the mineral — the vegetable — and the animal — Mineral acids are vitriolic, nitrous, <sup>or</sup> ~~and~~ marine — Vegetable acids are native, <sup>or</sup> lime juice, — or fermented, as vinegar — Animal acids are those in wine,





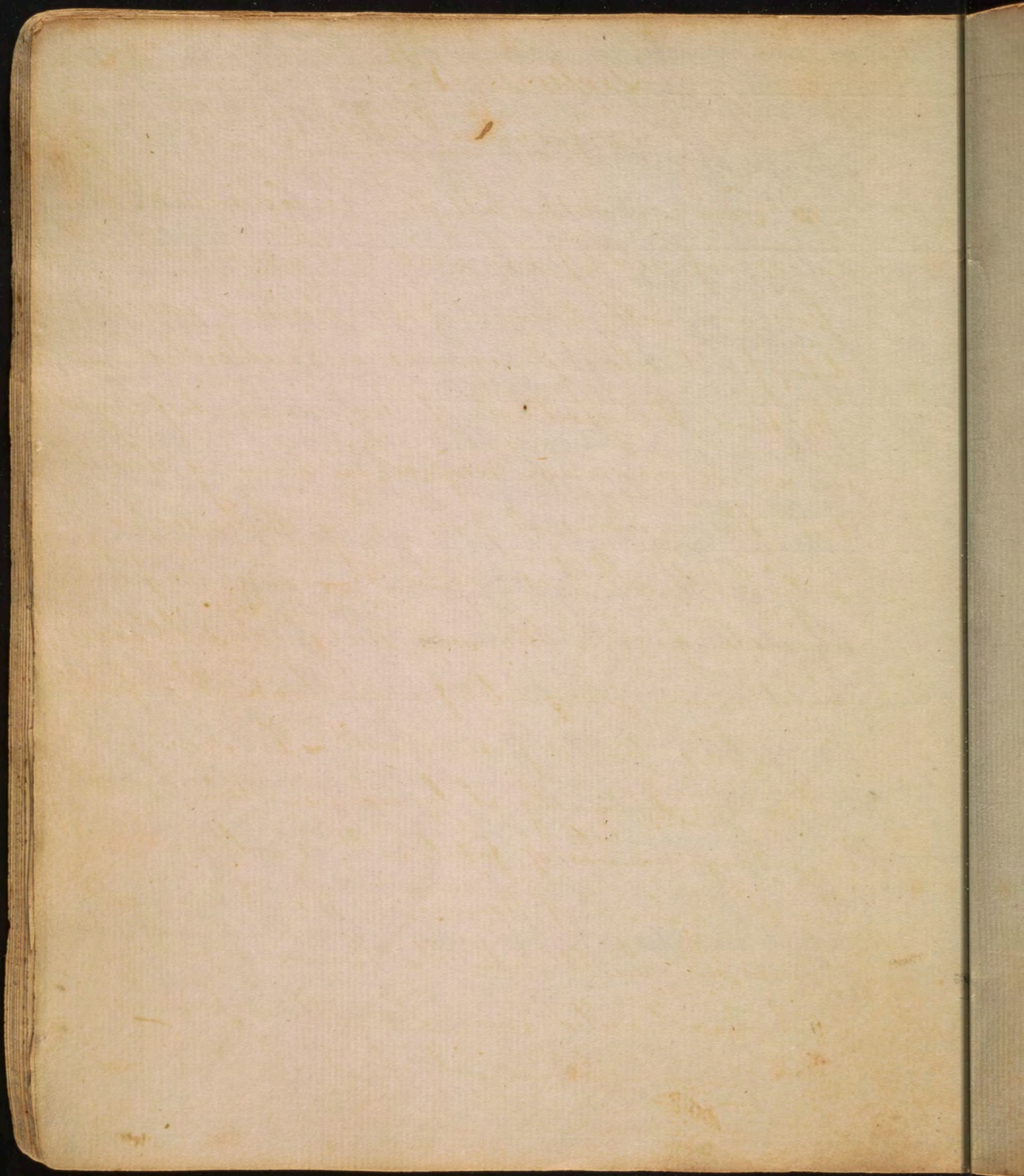


in insects, as ants, wasps, bees &c - hence, the stings of these are poisonous - Acids change the syrup of violets to a red.

Alkalies are of two kinds - 1<sup>st</sup> fixed - as potash from burnt vegetables.

2<sup>d</sup> volatile, as hartshorn; which is obtained, by distillation, from animal substances. Alkalies change the syrup of violets green - If an alkaline salt, and <sup>any strong liquid acid, as</sup> the vitriolic acid, be mixed together, they will immediately unite, ~~and~~ with a considerable effervescence, owing to the escape of fixed air from the alkali; by elective attraction - The proportion of fixed air, in alkalies, is  $\frac{1}{4}$  of their weight: this may be proved by weighing the vit. acid, and alk. before, and after, mixture - Alkalies are mild; but, having emitted their fixed air, are exceedingly corrosive, and caustic; if applied to the skin will burn it.







## Lecture 4<sup>th</sup>

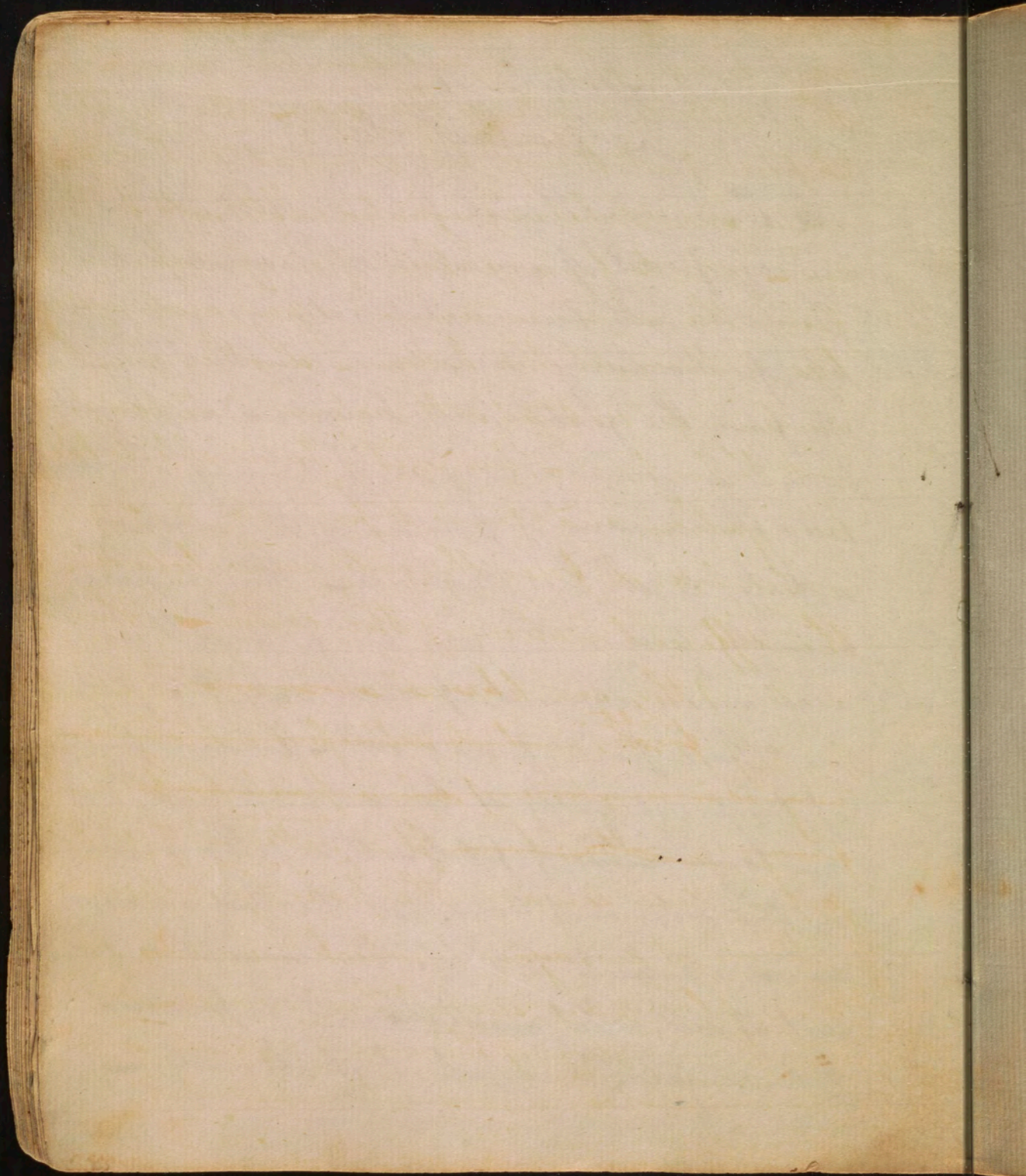
### Neutral Salts,

A Common salt, Salt-petre, or Glauber's salt, are composed of an acid and an alkali. Common salt, because of its extensive use in life, particularly deserves our attention—

We find the goodness of Providence displayed, in an uncommon degree, in having distributed the means of procuring this necessary article to all his creatures—thus, in parts remote from the seas we find salt springs and rivers abound from which the people in those parts procure salt. In some parts of Europe, especially, at Cracow in Poland, there are large <sup>beds</sup> ~~masses~~ of fossil salt, or salt rock, and in the island of Ormus, in the Indian ocean, houses are built with it. In some places, a sort of salt, called murietic salt, is procured from vegetables, in which it abounds—

But





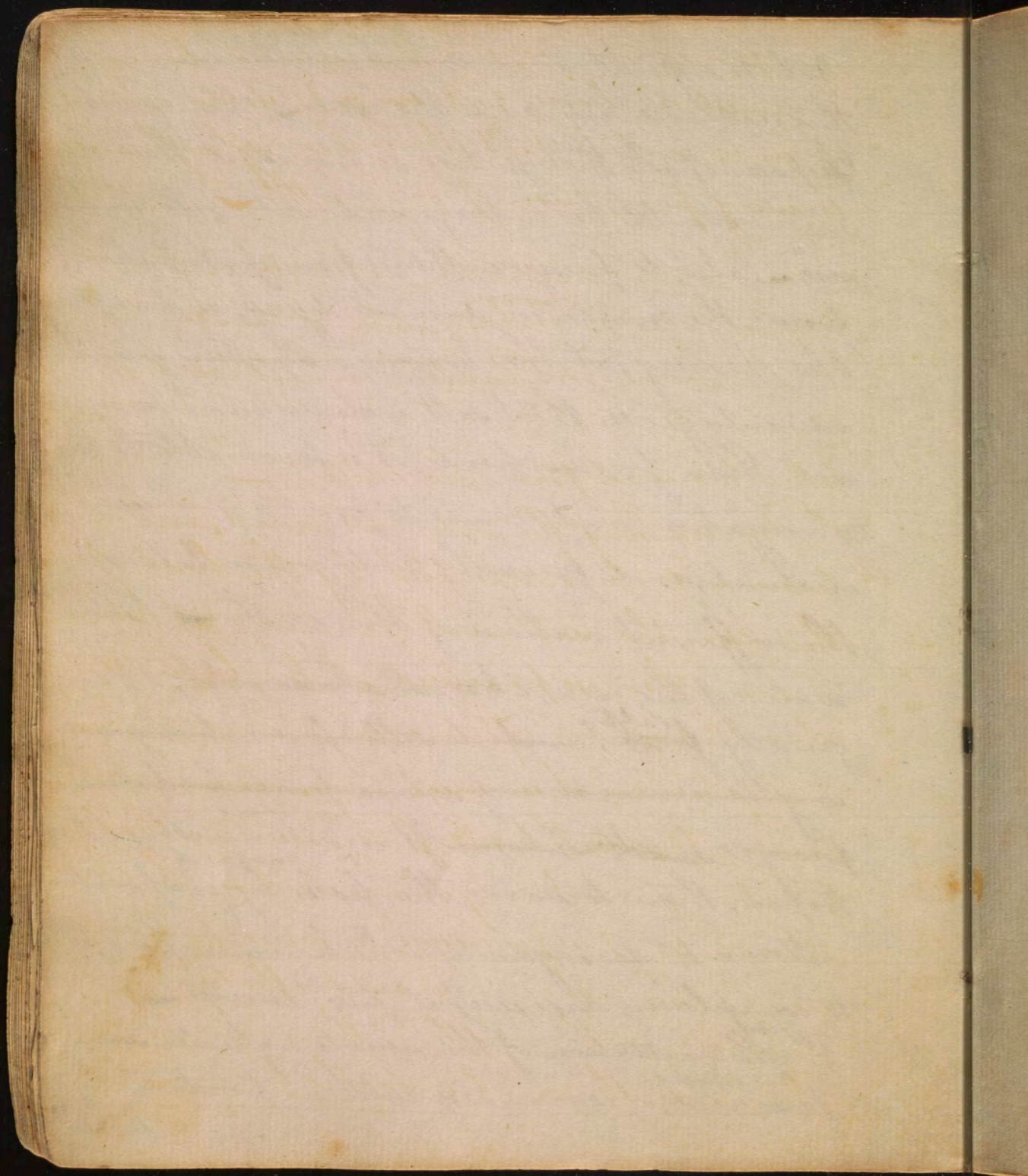


But the great and inexhaustible source of this valuable article is the sea - The great Disposer of all things has so ordered it that these waters should be impregnated with salt, for our use - also, to preserve them from putrefaction, from the numerous animals dying, and vegetables rotting, at the bottom - Another great advantage is, that salt water is more buoyant than fresh - hence, it is favourable to the navigation, and tends to promote a commercial, and friendly, intercourse, between the different nations of the earth - The water of the sea, like all other water, is originally ~~fresh~~ <sup>salt</sup>; and its saltness is entirely owing to a mixture of saline particles, from foreign ~~matter~~; hence, it is <sup>rendered</sup> salt within the tropics, than towards the poles, by <sup>means of</sup> evaporation.

Storms at sea, against which we are too apt to complain, are useful two ways -

1<sup>st</sup> <sup>They</sup> The agitation of the waves a greater surface <sup>is exposed,</sup> and, of course, a greater evaporation takes







takes place: the vapours thus exhaled, being condensed in clouds, fall in refreshing showers of rain, and impart their cheering influence to every production of our earth —

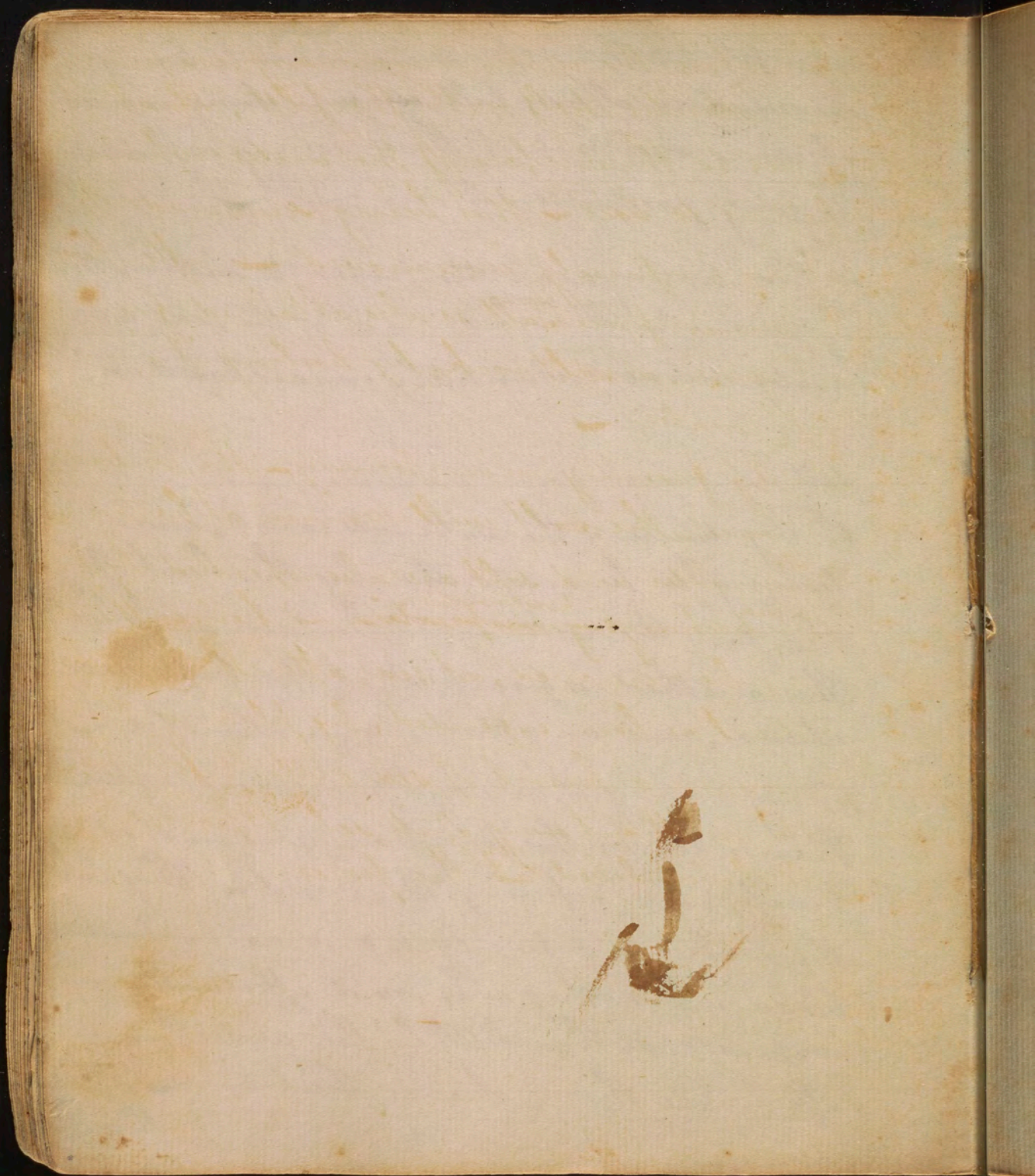
2.<sup>d</sup> The water near the poles, & within the tropics, also <sup>fresh water</sup> of rivers, and of the sea, are hereby more intimately mixed together.

Salt is procured from sea water, —

1.<sup>st</sup> By drawing the water into canals, and leaving <sup>it</sup> to be evaporated, by the heat of the sun, the salt will remain at bottom. This method is practised at the Cape Verde islands, and in other warm climates —

2.<sup>d</sup> By boiling it, in large pans, as in England & France &c. In this process a curious method of purifying, or refining, it, is used — They take the whites of a few eggs, or some bullocks' blood, which they mix, and effectually incorporate, with a little of the water, and afterwards throw it into the pan —   
this —





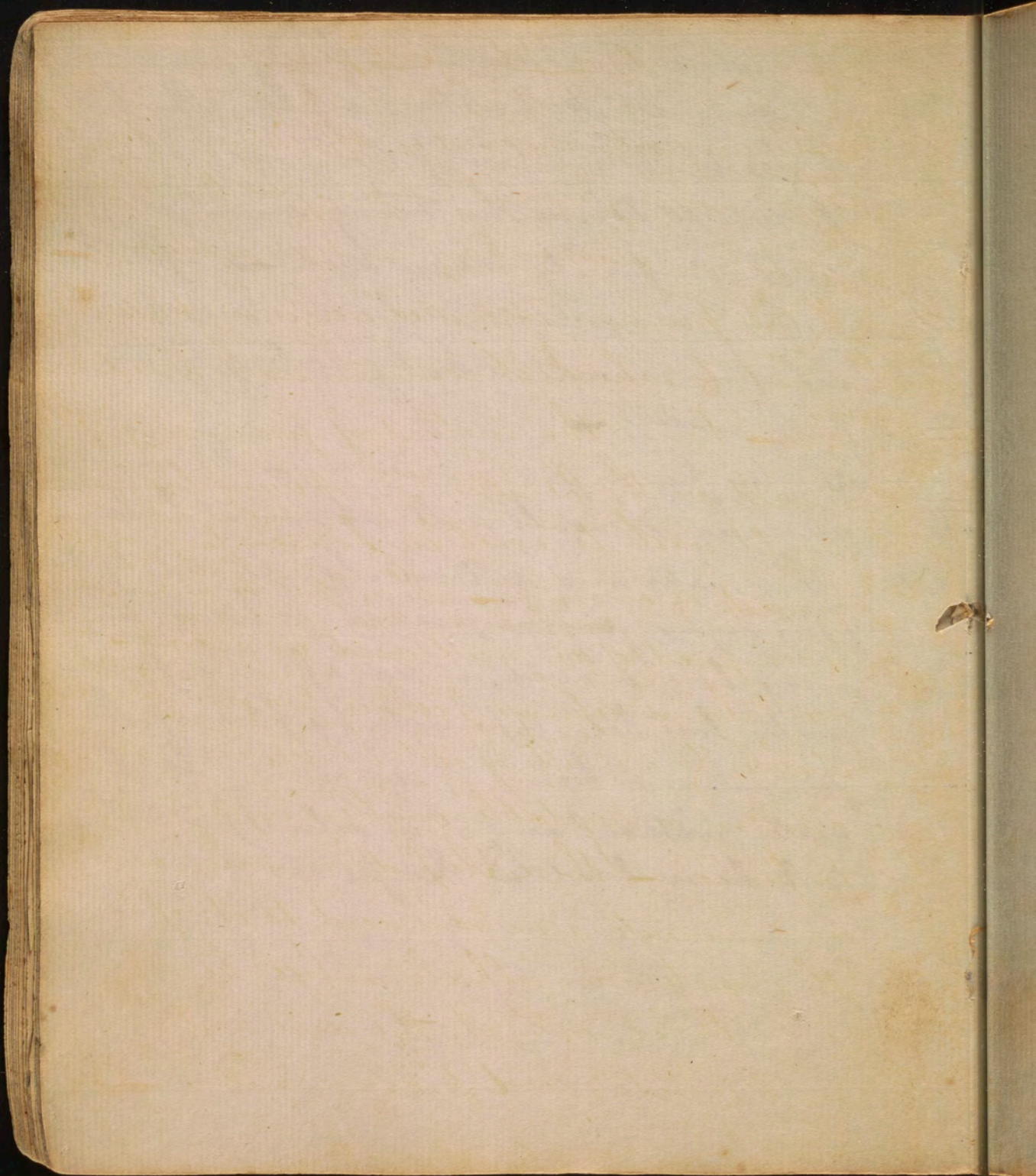


this, while the water is ~~boiling~~<sup>boiling</sup>, coagulates, and unites itself with the filth, which it raises to the surface of the water, when it begins to boil - this being skimmed off, every impurity is removed - after this manner pure salt is also obtained from sal gem, or salt rock, by boiling it in fresh water -

3.<sup>d</sup> Dry freezing, as in Norway - the ice being removed, the salt will remain at bottom.

The water and salt are also separated by the pores <sup>which</sup> discharging <sup>perspiration</sup> ~~evaporation~~ - hence thirst may be removed, at sea, after the fresh water has been expended, by placing the person in a barrel of sea water; for the water, without any of its saline particles, will be imbibed <sup>by</sup> the pores.



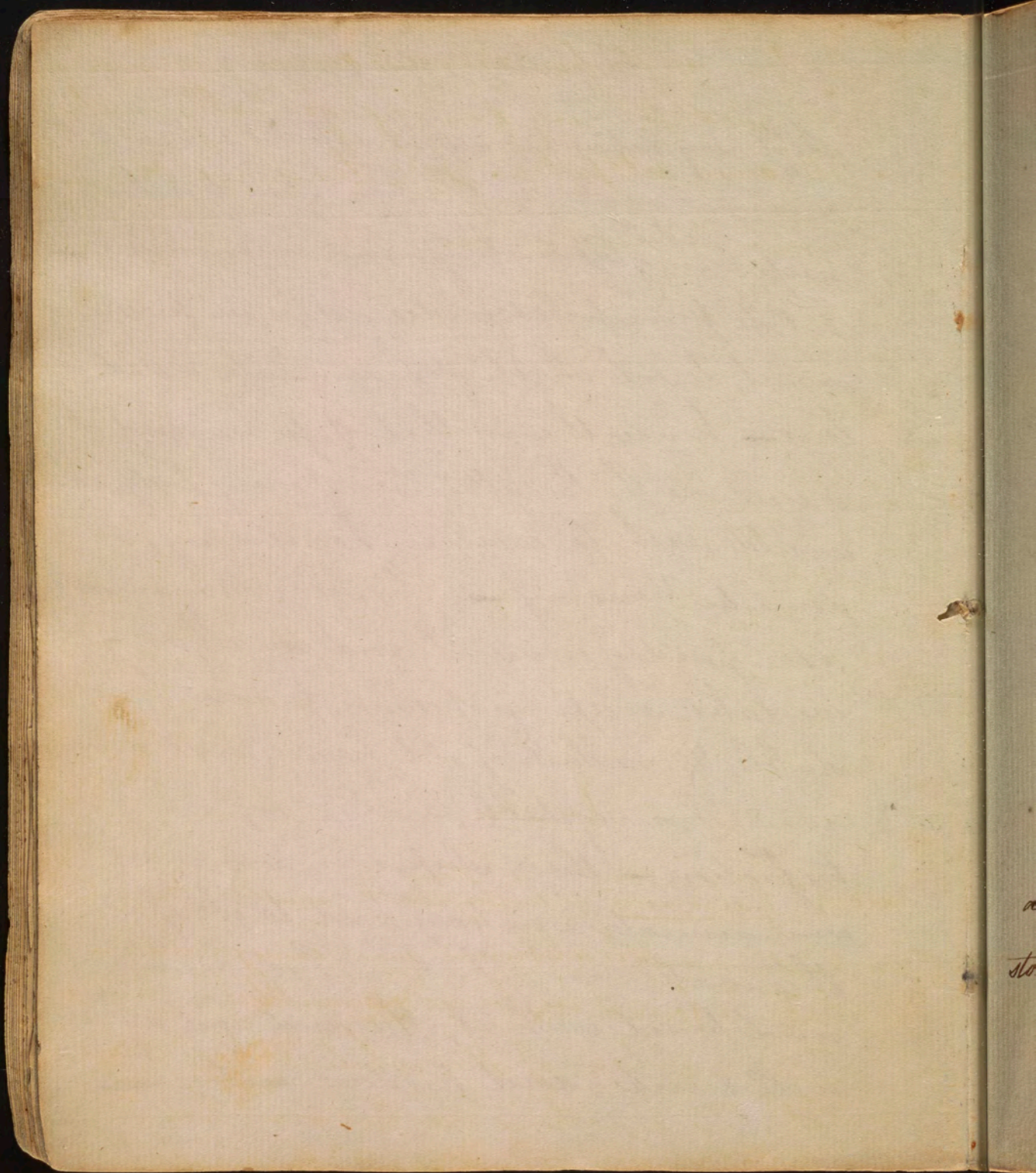




of nitre, or salt petre.

It is of very extensive use in different arts; it is the principal ingredient in gun-powder; it is useful in glass making; and in medicine — but, its principal domestic use, is, in preserving meat, to which it communicates a red colour — hence, the method of procuring it is well worth the attention of every lady, who would wish to excel in housewifery, and domestic economy — This, like common salt, is composed of an acid and an alkali — if we take sweepings of cellars, pigeon houses, stables &c. rubbish of old houses, and any animal, or vegetable, matters capable of putrefaction — these steeped in water will communicate a nitrous acid to it; if to this water an alkali, as lye, be added and boiled with it, the acid and alkali will unite, and produce nitre —





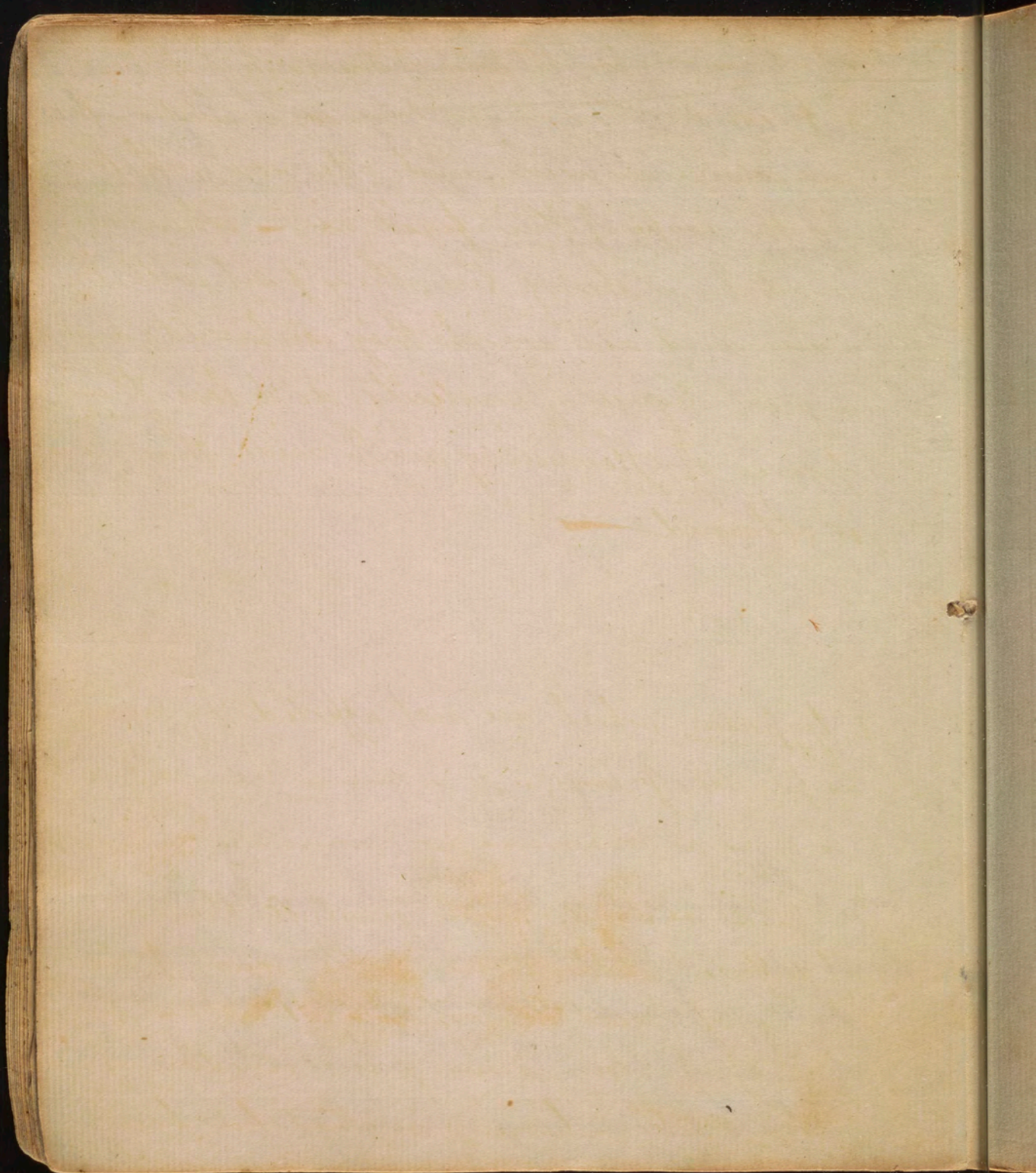


In Germany where domestic economy is much attended to every family generally makes its own salt petre. It is likewise obtained from tobacco leaves. —

### Earths.

are, 1. Calcareous, as <sup>stone</sup> lime, chalk, marble &c. — lime stone, and marble, abound in Pennsylvania — chalk is found in large quantities in England; hence we hear of the white cliffs of Albion which are nothing else but great bodies of chalk.





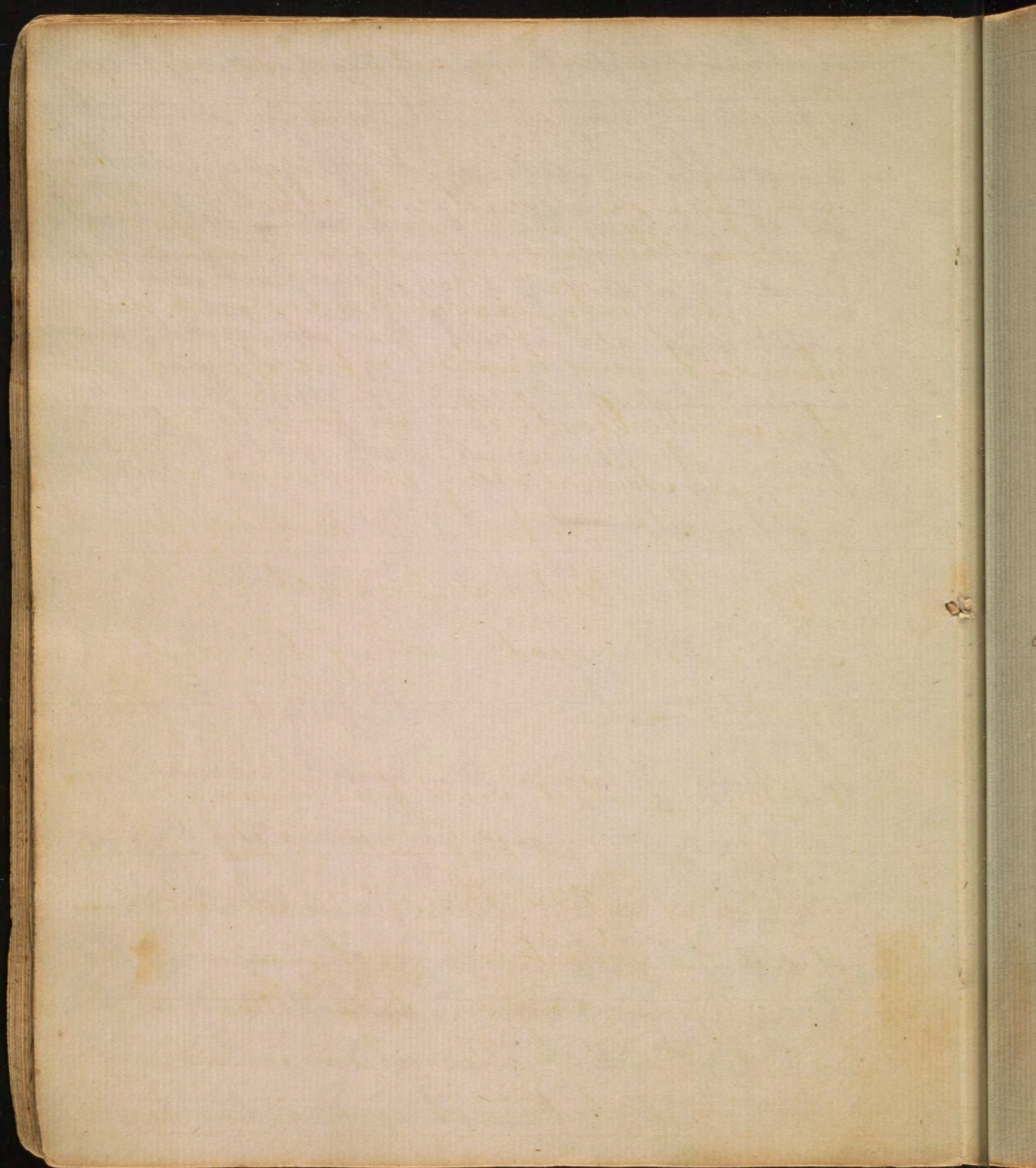


chalk - one fourth part of the weight of these is fixed air they also contain some water - they are soluble in acids; and effervesce with them, by the escape of their fixed air - when calcined by a strong fire, they part with the water and air which they contained; acquire a great degree of causticity; and lose their power of effervescing with acids - thus, <sup>quick</sup> lime is obtained -

2. Gypsous, which are not affected by acids, as plaster of Paris, . It is much valued, and used as a manure for promoting the growth of grass.

3. Flinty, as sand, stones, jewels &c. there are of different values - one, in the crown of the king of Great Britain <sup>is valued at</sup> £100,000 - their variety of colour is owing to a mixture of metallic matter - hence a method has been dis-





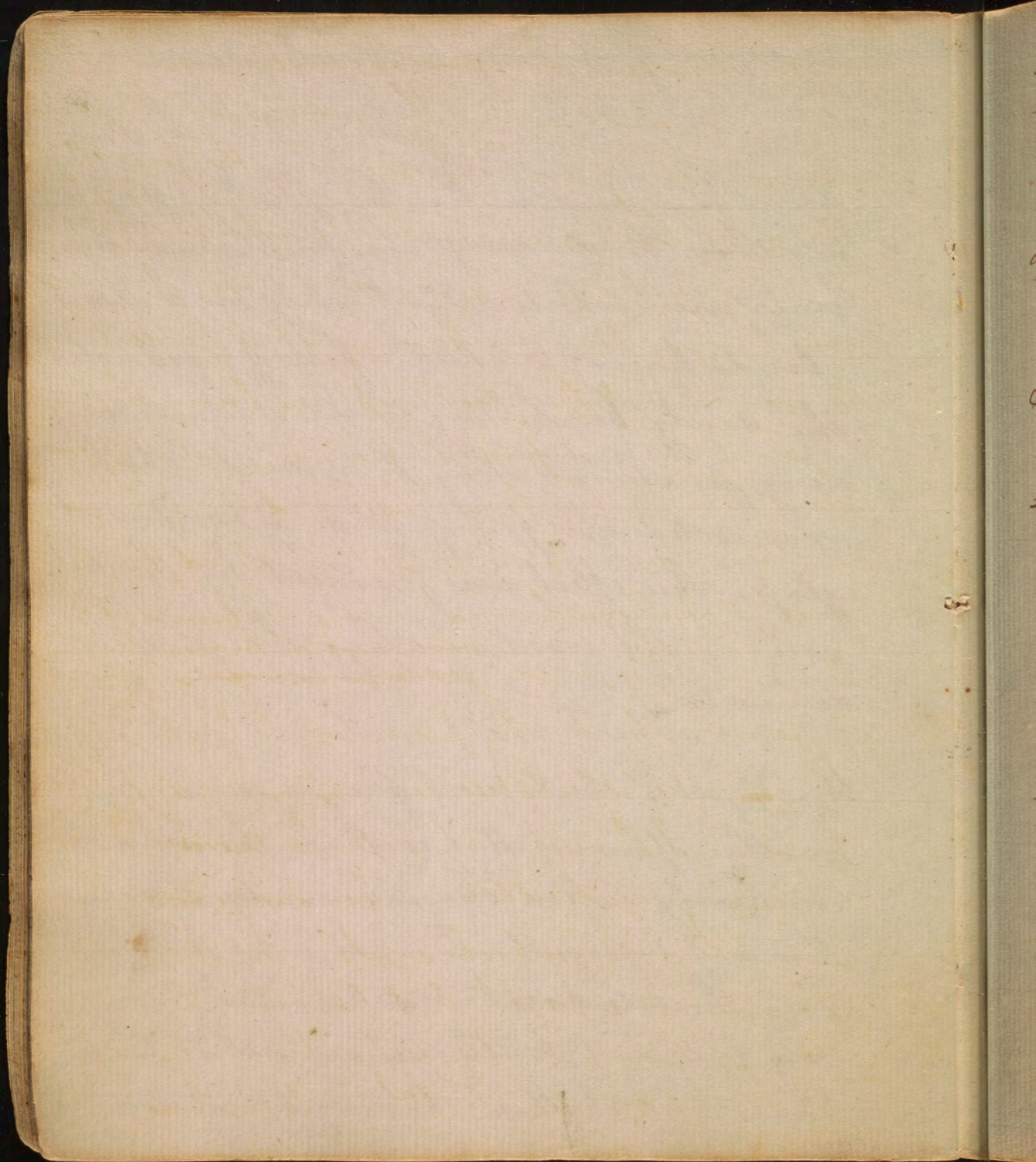


discovered of making artificial stones,

from fine sand melted by alkalies glass is made - this discovery was first made by some men who were cast away on a desert island & having kindled a fire of wood upon the sandy beach they beheld a liquid running in streams along the ground which when cooled was found to be a transparent glass - this effect was produced by the alk. salt, in the wood, melting the sand underneath -

4. Asbestos, which resist fire, as ising. glass - another species of this earth is, the asbestos, commonly called the salamander stone - this is of a greyish colour - it may be split into threads, from one to ten inches long, very fine, and brittle, yet somewhat tractable, inasmuch that it may be carded and spun

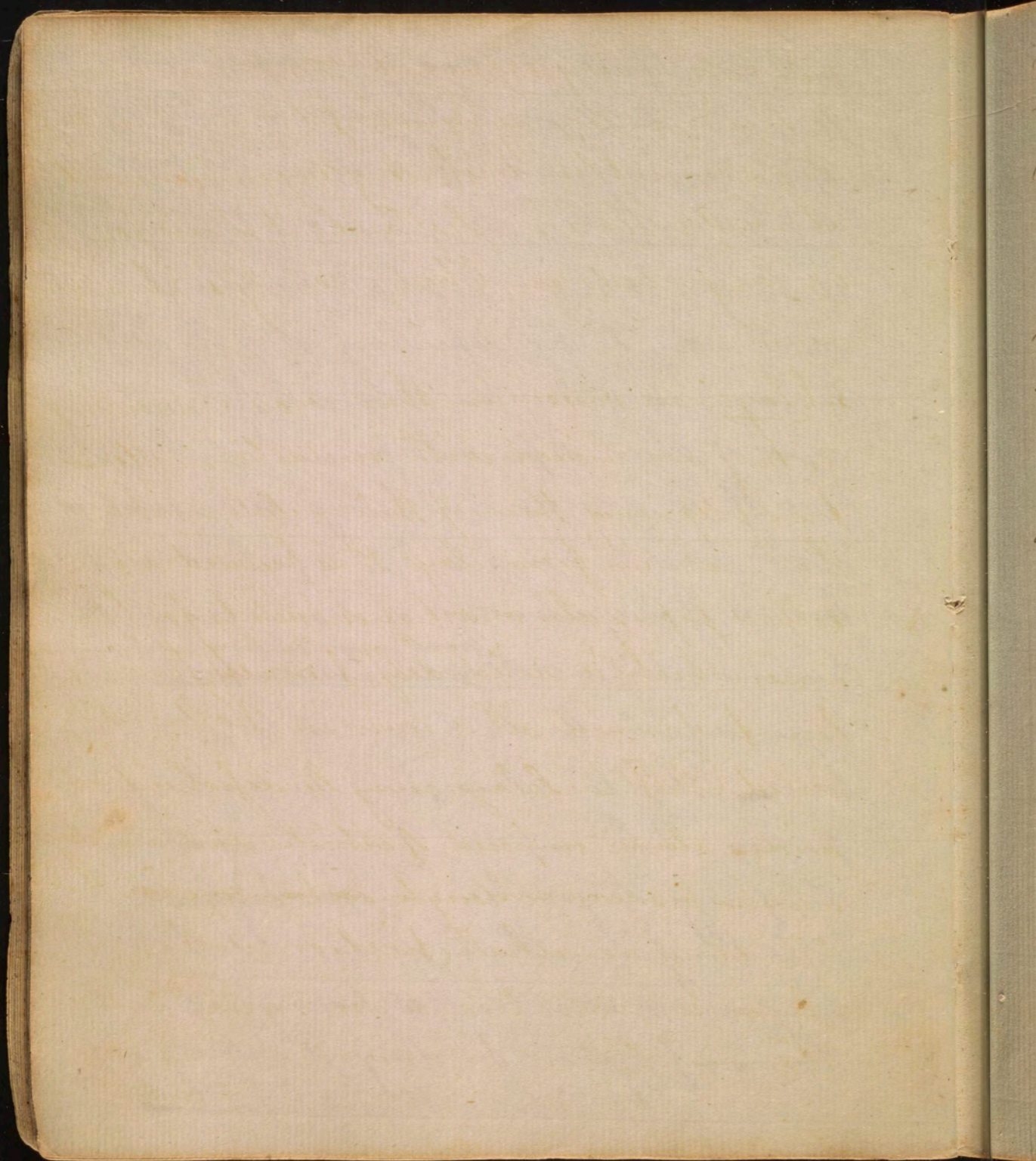






with cotton (not alone) — the cloth, made of  
this, is endued with the wonderful property  
of remaining unconsumed in the fire; the  
fire only cleans, and makes it a little whiter  
it deprives it also of a small portion of its weight  
which may be by depriving it of its dirt —  
In garments of this the Egyptians burn the  
corpses of their departed friends, and so pre-  
serve their ashes from being dispersed. —  
of this a certain Sus.<sup>h</sup> Wright who lived on the  
banks of Susquehanna, and was famed for  
her industry, and ~~good housewifery~~ <sup>great mental accomplishments</sup>, made  
a purse which she presented to Doctor Frank-  
lin — this the Doctor, in a pretended fit of  
passion at his servant, before a numerous  
company of gentlemen, ~~in a fit of passion~~, threw  
into the fire; which so alarmed them that  
they ran to save it; but how great was  
their surprise on finding it entirely safe,  
only a little whiter than before! — The



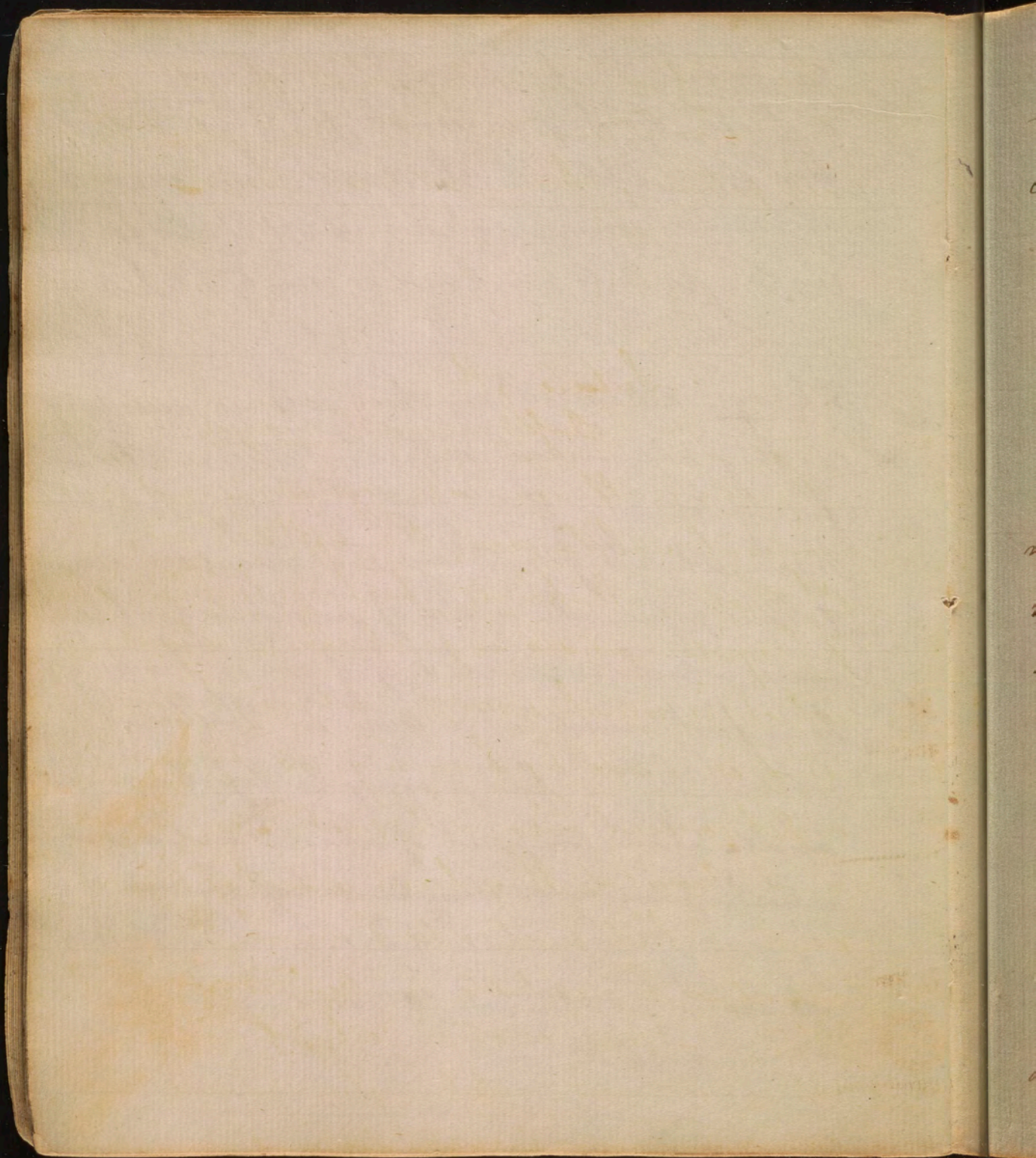




The Doctor having explained this phenomenon to them, a very agreeable fit of mirth ensued. This stone is found at Anglesey, in Wales, and at Aberdeenshire in Scotland; it is also found in large beds in Chester county in Pennsylvania.

5. Clays are various in their colours according as they are mixed with metallic matters. fire, by depriving them of their metals, makes them white - from clays thus burned are made tobacco pipes - also a sort of substitute for China ware, which is called delf from its having been first made at a town in Holland called Delft. Clays may be dissolved in acids. alum composed of vitriolic acid and clay - ~~which produces a double sort of liquid~~ this by adding an alkali, fixed or volatile, gives ~~advice~~ a neutral salt according to the nature of the acid added.







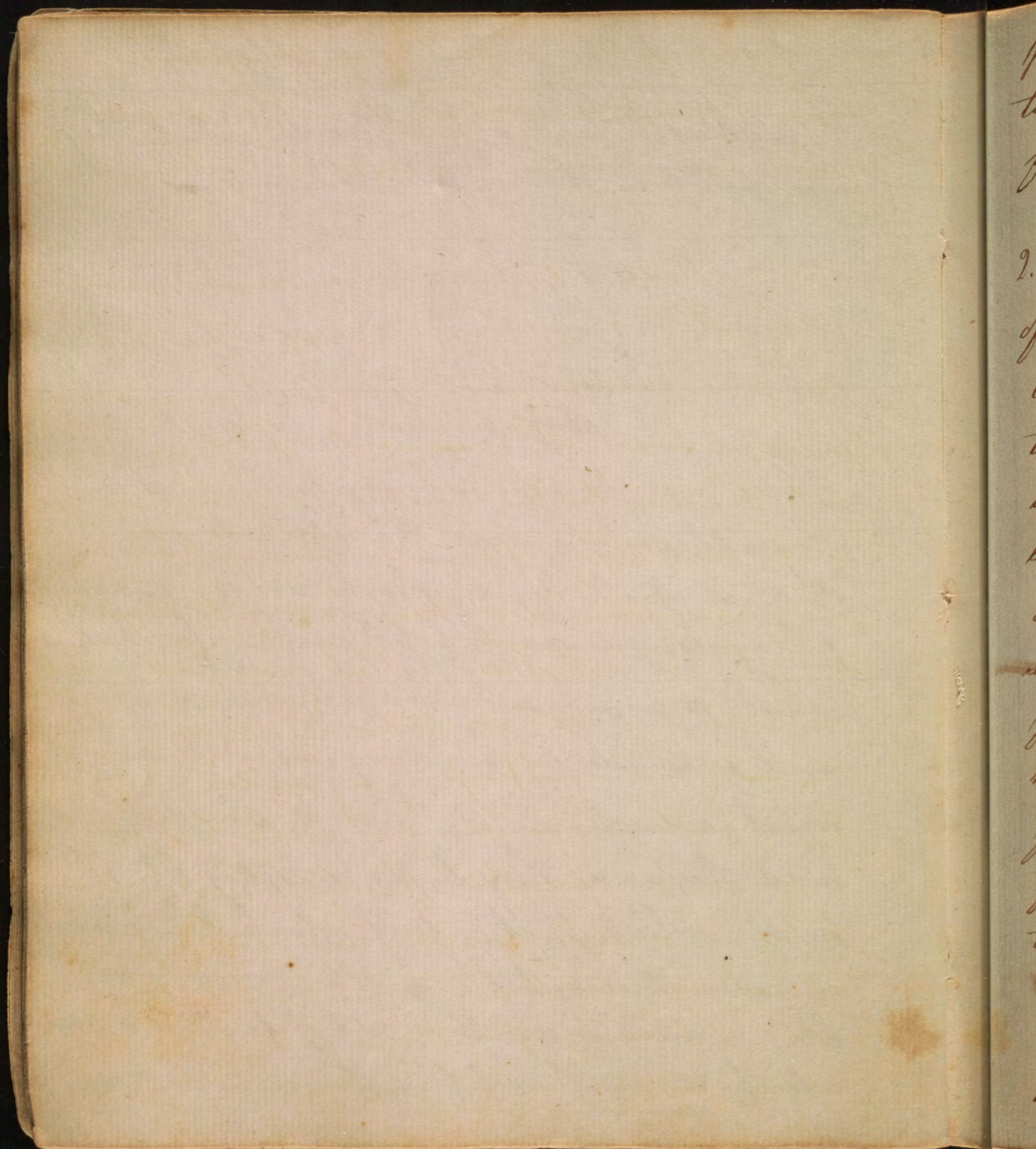
From a fine white clay, which the Chinese term haoli, and a flinty earth, which they call petunee, china-ware is made -

### Lecture 5<sup>th</sup>

#### Inflammable bodies.

There are, all animal, vegetable, and some mineral substances - the diff<sup>t</sup> sorts are,  
1<sup>st</sup> Fuel of all kinds, which contains much phlogiston, as sea or fossil coal - also charcoal, which is much used by artificers in metals, and is made by burning wood to coal, in a pit covered over with earth - in Scotland, and Ireland they burn a sort of black earth called peat, or turf, which, being much mixed with vegetable matters, is very inflammable - another sort of fuel is wood which is more or less inflammable in  
pro-



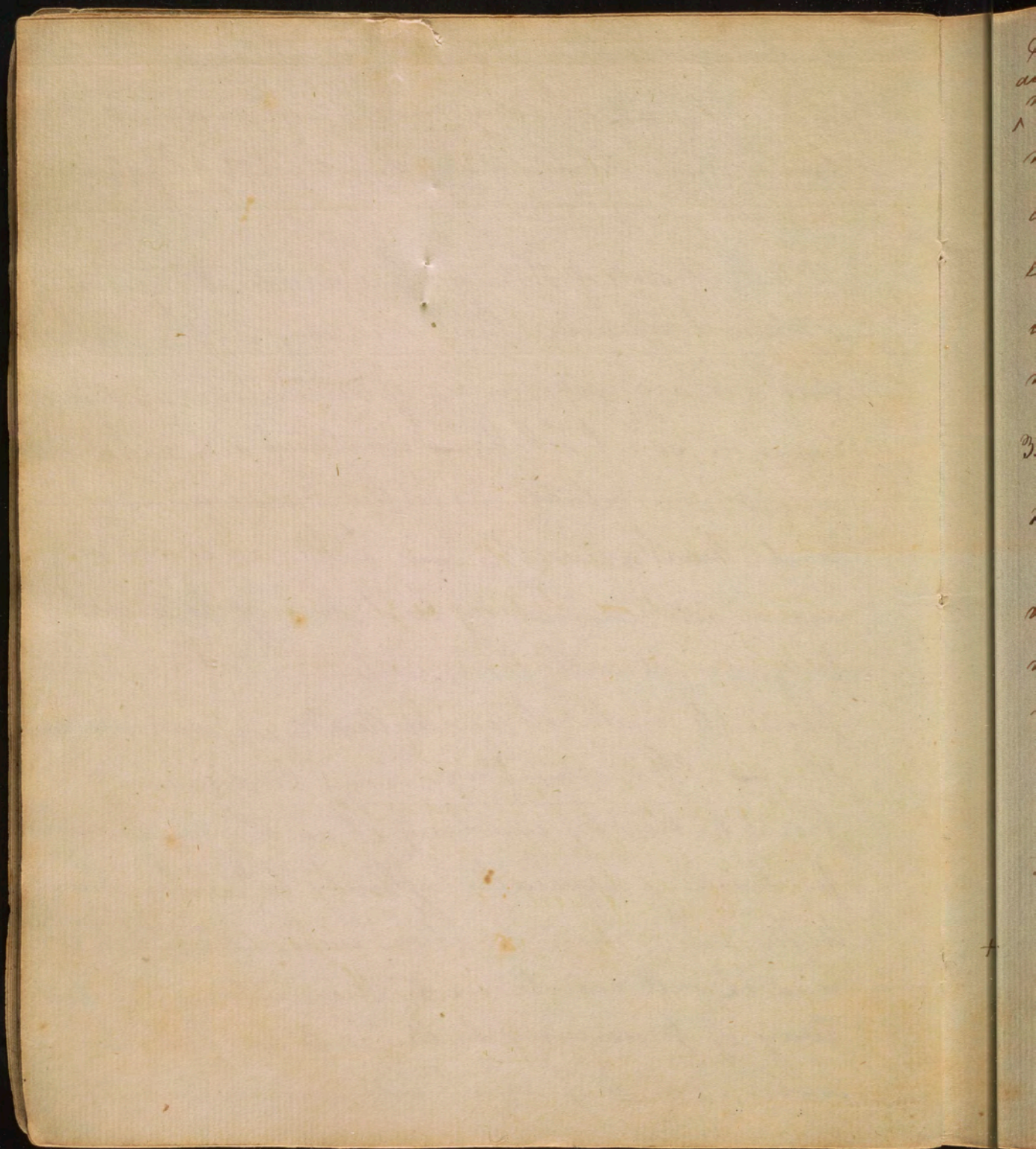




proportion to the quantity of phlogiston it contains. Pine & Hickory most inflammable, from their abounding most with phlogiston.

2. Oils— all sorts of these possess a considerable quantity of phlogiston— hence they are very inflammable. Oils are, aromatic, as oil of turpentine; and unctuous as sweet oil &c — unctuous oils are divided into the vegetable, as butter— and animal as lard— bears' grease &c — All unctuous oils are made rancid by heat, owing to a watry body, mixed with them, called mucilage; which ferments and rots in butter &c, in warm weather— This mucilage may be drawn off from butter by washing it with fresh water, for having a greater affinity to <sup>the</sup> water, than to the oil a decomposition will take place and it will unite with the water— the best way of preserving butter, is, to use but little water, and, to press it well.







In order to prevent rancidity in <sup>oil</sup> butter &c. it is  
also <sup>add to it a little</sup> necessary to ~~mix it with~~ salt; this effectually sepe-  
rates the mucilage from the oil; and dissolving  
unites with it, and carries it to the bottom  
leaving the pure oil at the top - After  
butter or oil have become rancid, they may be pu-  
rified considerably, by washing them with water.

3. Sulphur - this being composed of a ~~vitriolic~~ acid and  
phlogiston is exceedingly inflammable - if it be burned,  
and its fumes collected, in a vial, we shall have a  
vitriolic acid - Sulphur is found mixed with all  
metals; iron ore, in particular, abounds with it - In  
many places. it is found, in large quantities, in  
the bowels of the earth; where it frequently  
catches fire, and, by water communicating with  
this fire earthquakes are produced; for the fire  
converts the fixed air into elastic air, which,  
together with a steam, or vapour, produced by  
the contact of the flame & water, produces the  
explosion and all the usual phenomena  
of earthquakes. -

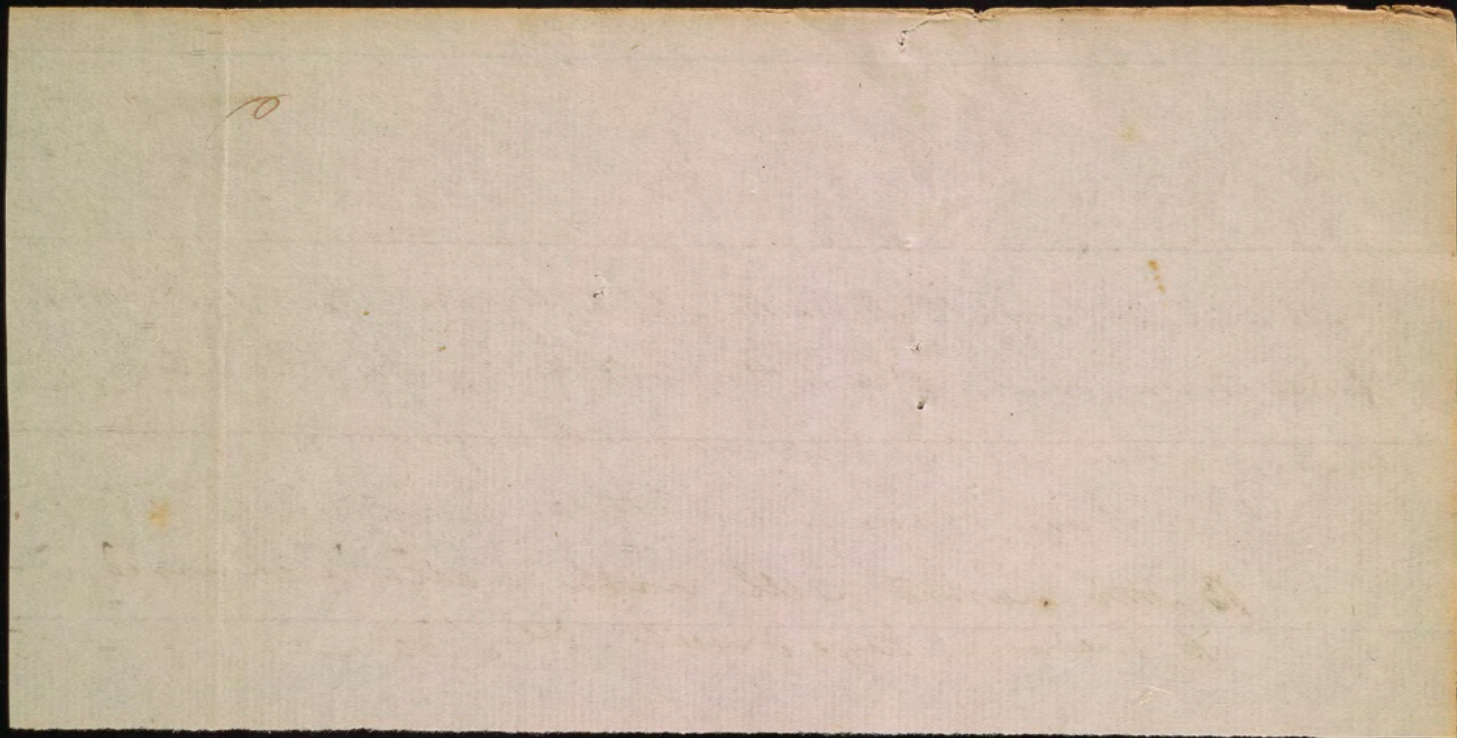


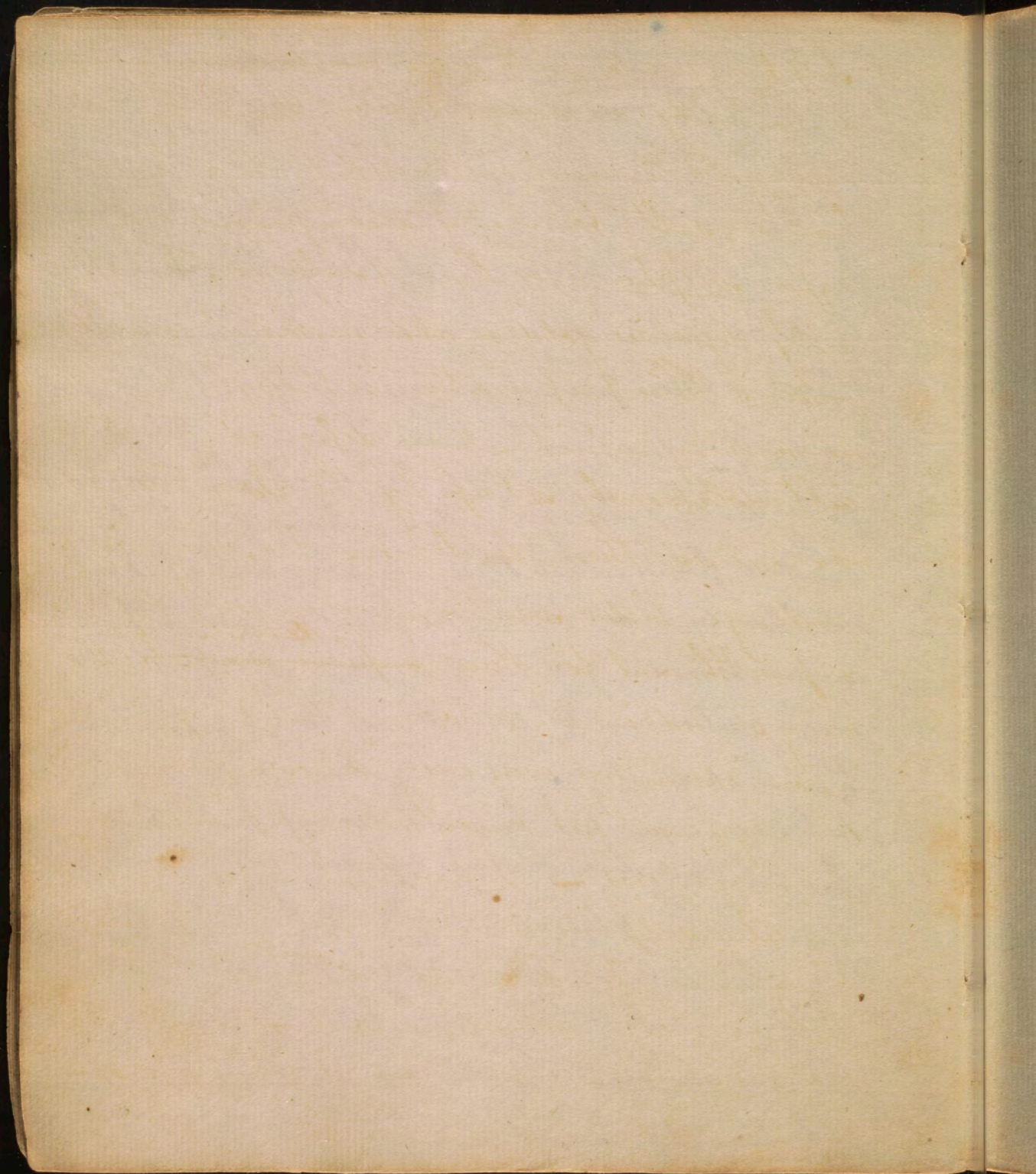
well washed &

Stale butter may be very greatly improved by being put into a churn with buttermilk which has been produced from fresh cream, or (which is better,) into sweet milk; the action of churning reduces it in appearance, to its first state, and by continuing to churn, it again comes to the consistence of butter.

Butter washed well with water & churned <sup>th</sup> it makes it keep sweet. De Sloan



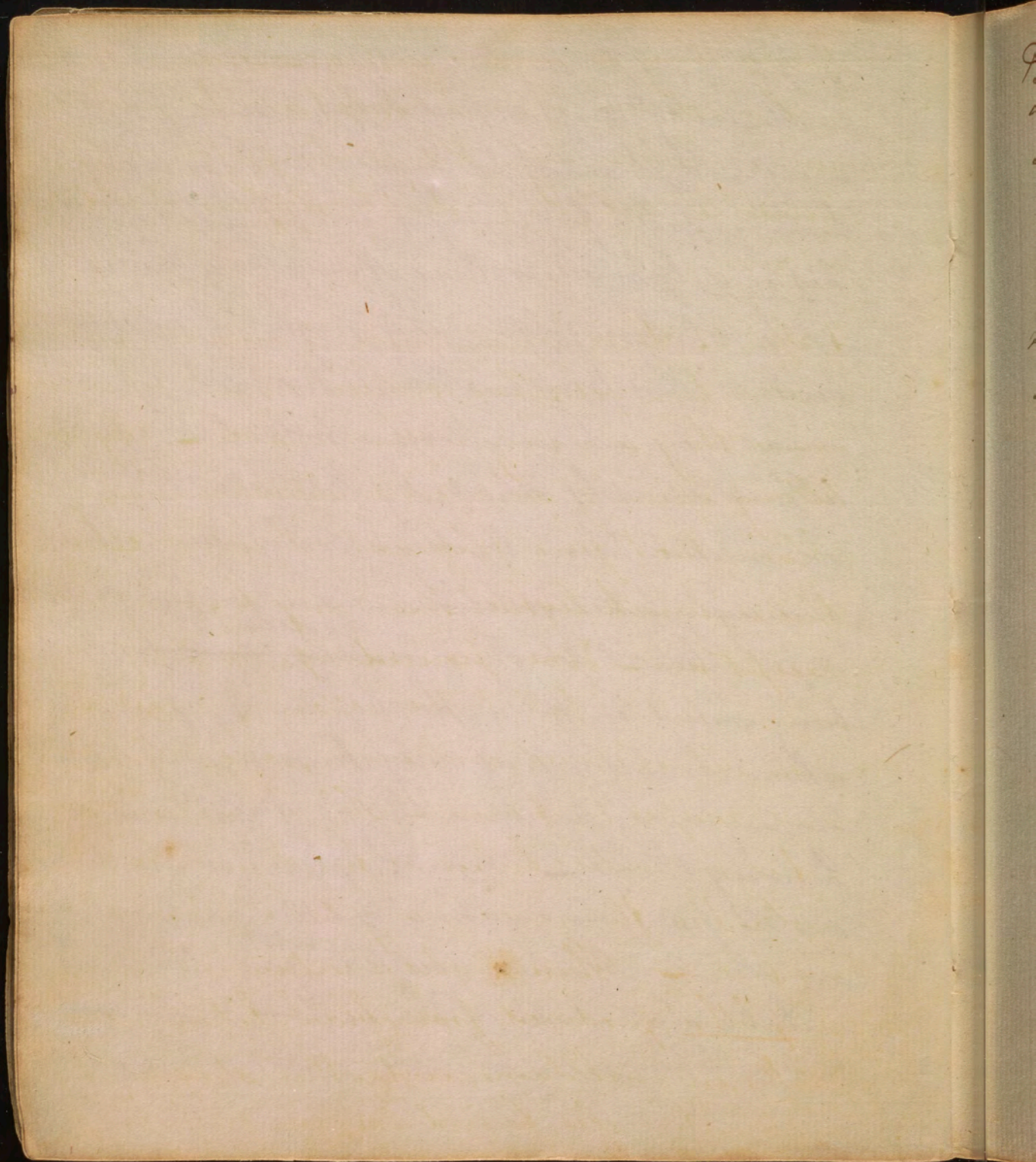






Sulphur unites with most metals, destroys their malleability and even dissolves them; but to melt gold, it must be united with a fixed alkaline salt, forming a compound called hepar sulphuris, or liver of sulphur. This effectually dissolves gold so as to make it soluble in water. This preparation is thought to be the means by which Moses dissolved the golden calf, idolatrously set up by the Israelites, which he caused them to drink. This, being an exceedingly bitter solution, was, in some degree, a punishment for their ~~impious conduct~~ <sup>idolatry</sup>. Moses being skilled in the wisdom of the Egyptians, to whom chemistry was early known, very probably, acquired his knowledge of this science among them — Hepar sulphuris is made by melting sulphur with a gentle heat, and stirring into it, while melted, <sup>with</sup> four times its weight of dry alkaline salt — or, by boiling the sulphur in a solution of alkaline salt.



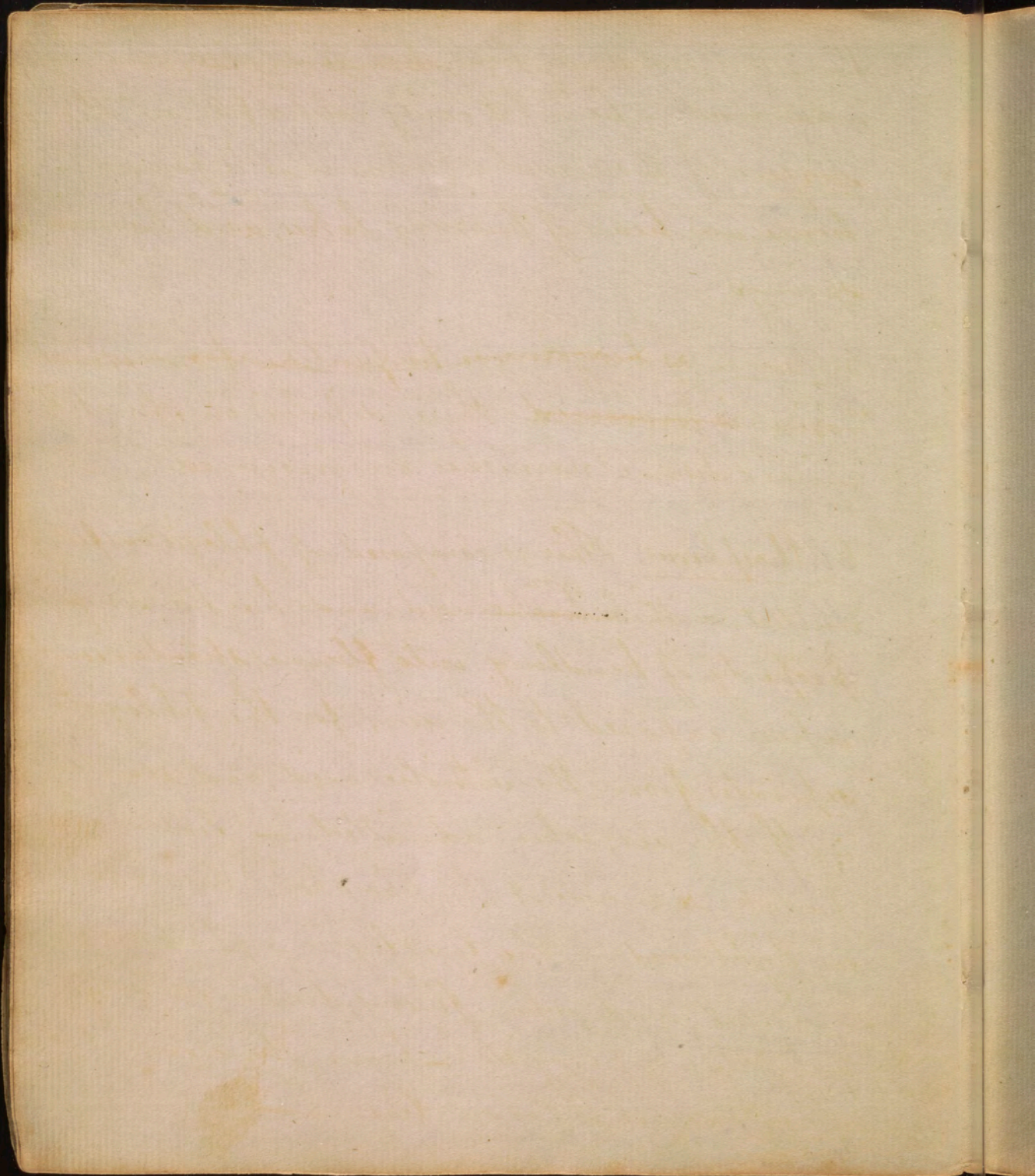




If any thing be written with a solution of lead, and a solution of hepar sulphuris be passed over it, when dry, the writing, formerly invisible, will immediately appear of a dark colour.

4. Spirits. These are composed of an acid, water, and a fine oil; they contain much phlogiston, hence they are very inflammable. - By distilling spirit of wine with vitriolic acid, we obtain that fine fragrant oil called ether; this is much lighter than any known fluid, except air. - Ether poured upon a lump of sugar, and let fall to the bottom of a vial, filled with vitriolic acid, and water, rises to the top, and escapes in flame. - This is vulgarly called a fire in water; but, since fire cannot exist in water, the flame can only take place at the surface. - There is also a certain oil called naphtha, produced from black bituminous earths, in milldams, and other stagnant waters; it is also found in some springs, <sup>this</sup>





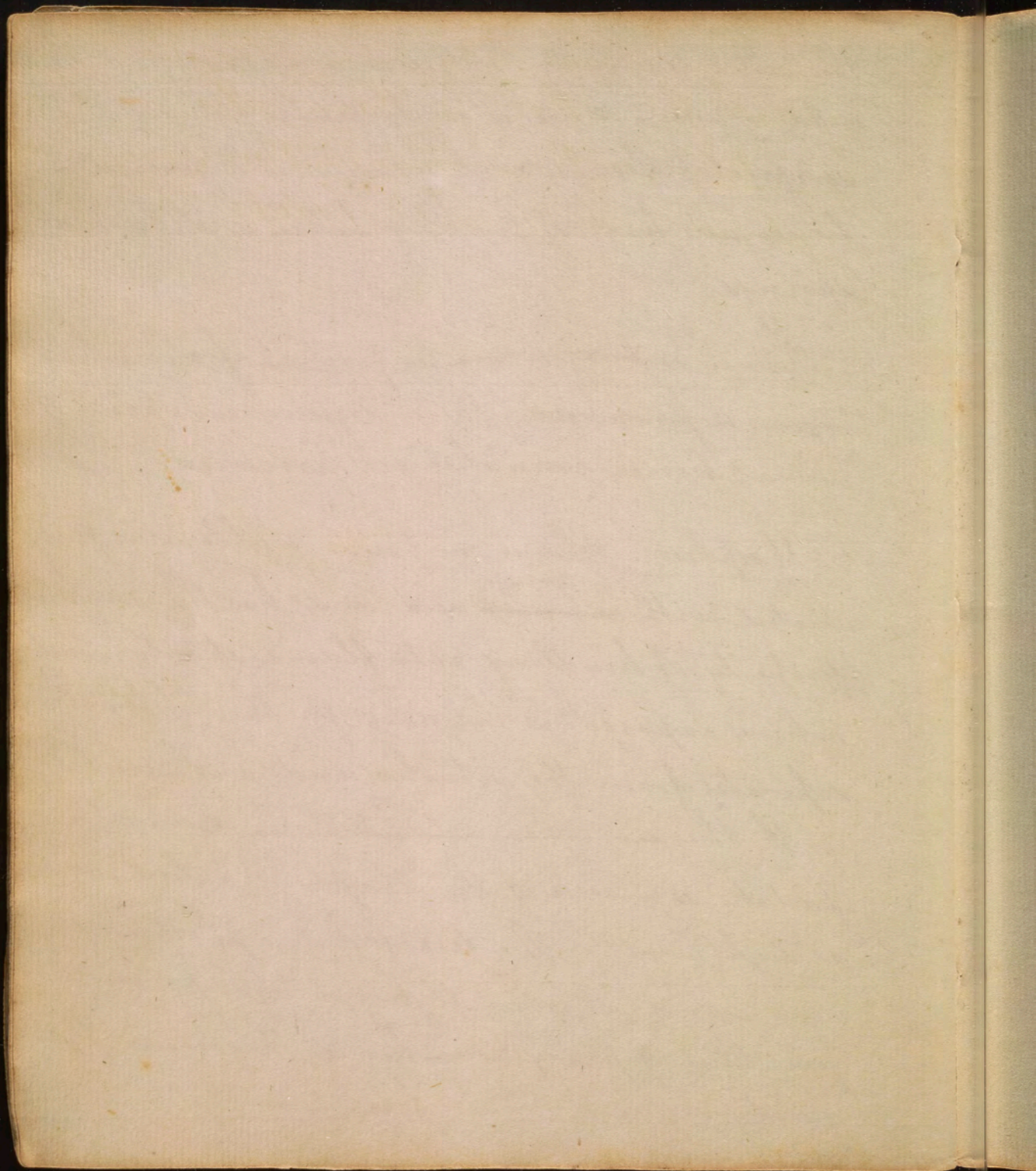


This oil is exceedingly light, ~~clear as crystal~~, and highly inflammable - hence, it easily catches fire, on the surface of those waters wherein it is found - hence, we hear of burning lakes, and burning springs

5. Resins. as ~~benzoin~~ or ~~turpentine~~ from which as rosin <sup>is</sup> ~~is procured~~ these dissolve in spirit of wine; hence varnishes are procured.

6. Phosphorus. This is composed of phlogiston fully united with <sup>an</sup> ~~nitric~~ vitriolic acid, and has the singular property of kindling into flame, spontaneously, when exposed to the air; for the phlogiston separates from the vitriolic acid, and unites with the air, when admitted. - Several bodies partake ~~so~~ much of the phosphoric nature, such as lightwood - The fire fly is a phosphoric animal, and, when flying, discharges large quantities of phlogiston - hence, the ocean frequently seems to be on fire - Meteors

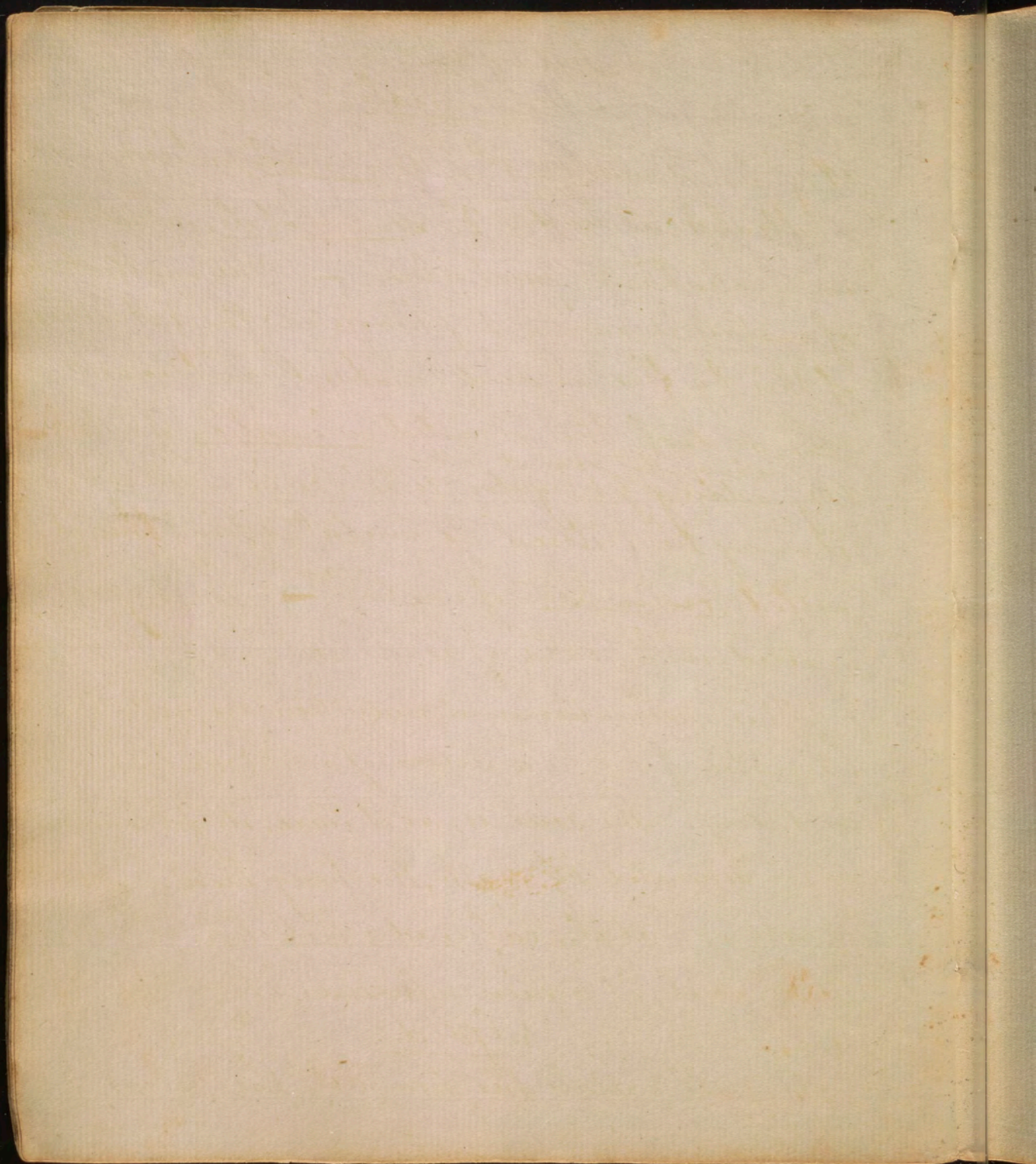






Meteors are bodies filled with phlogiston, which  
seperates from them in their motion. — The  
ignis fatuus, or, Jack with a lanthorn, may also  
be clasped with phosphoric bodies.







Lecture 6<sup>th</sup>  
On metals.

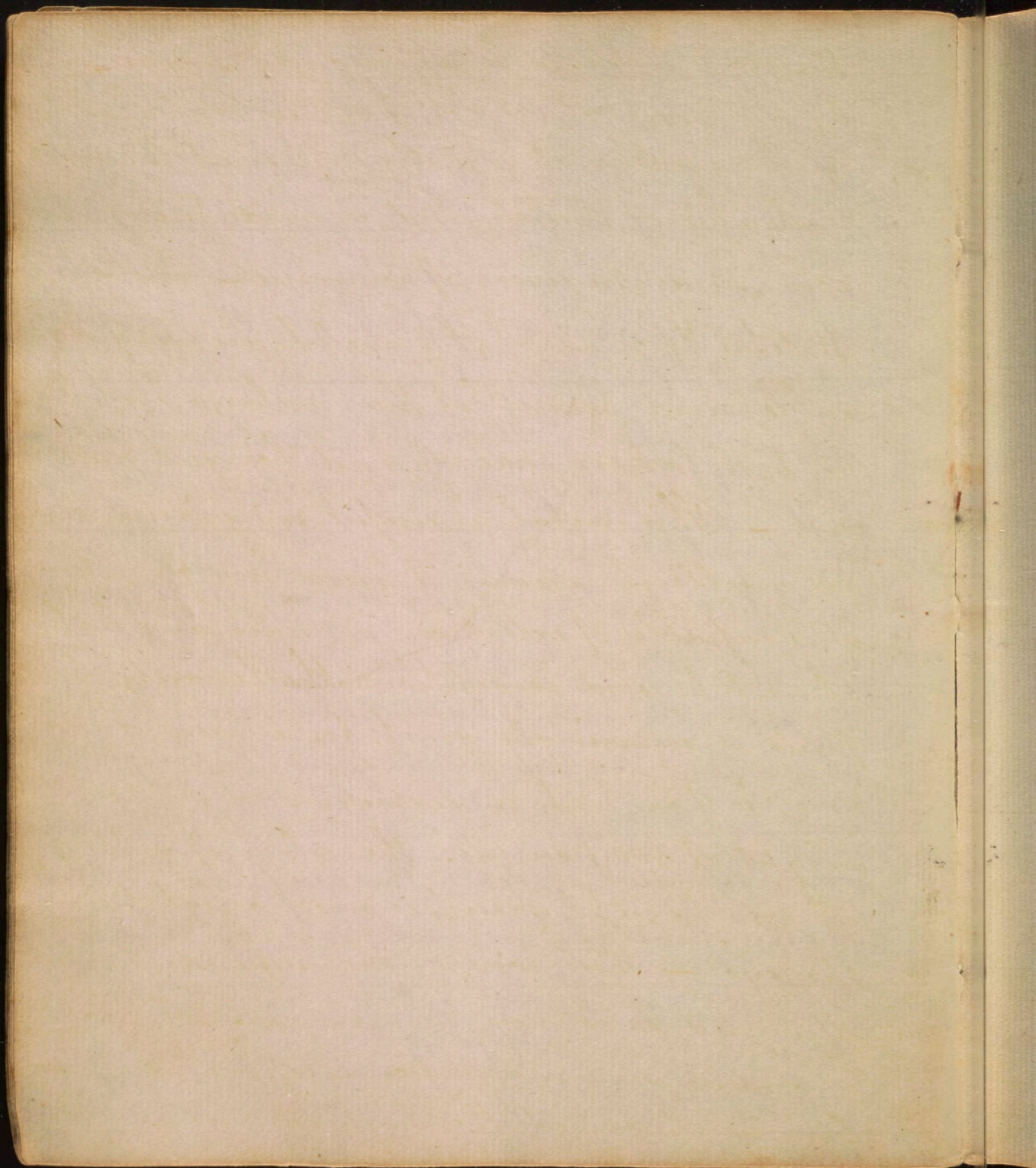
They are divided - 1<sup>st</sup> into metals, which are malleable; as lead - 2<sup>d</sup> semimetals, which are immalleable; as quicksilver - The malleability of metals is owing to phlogiston; the extraction of this by fire or acids makes them become a calx, or drop: this is called calcination of metals - By adding <sup>a body that abounds with</sup> phlogiston to this calx and melting it may be restored to metal again; this is called reduction of metals - Thus, grease melted with calx of lead reduces it to lead.

This calcination, and reduction, are truly emblematic of the resurrection of our bodies, at the last day. The soul is, as it were, its phlogiston; when separated by death, the body becomes, like a calx of metal, calcined; but, by the reunion of the soul, it again assumes its ancient form -

v. Gold

Is of all metals the heaviest, the purest, and the







the least liable to be affected by fire, air, <sup>&c.</sup> hence  
by the universal consent of all nations, ancient,  
and modern, it is justly reckoned the most  
valuable of metals; and is made use of in  
coin, as a medium of commerce - Buttons,  
Watches, &c. made of this metal, are very du-  
rable; and because of their value, are apt to  
be best taken care of, and longest preser-  
ved - This metal is useful in gilding, and  
an excellent means of preserving furniture;  
it is capable of extension in wire, and leaf,  
almost beyond conception: the tenacity of its  
parts is amazingly great; for a piece of gold  
wire 10 of an inch in diameter will support a  
weight of 500 pounds: the colour of gold, of  
all others, except green, is most delightful to  
the eye - When one of the inspired writers  
attempted to convey, to man, some idea of the  
grandeur, and magnificence, of the new Jerusa-  
lem, he discovered the high estimation in  
which



revelations 21. 101.

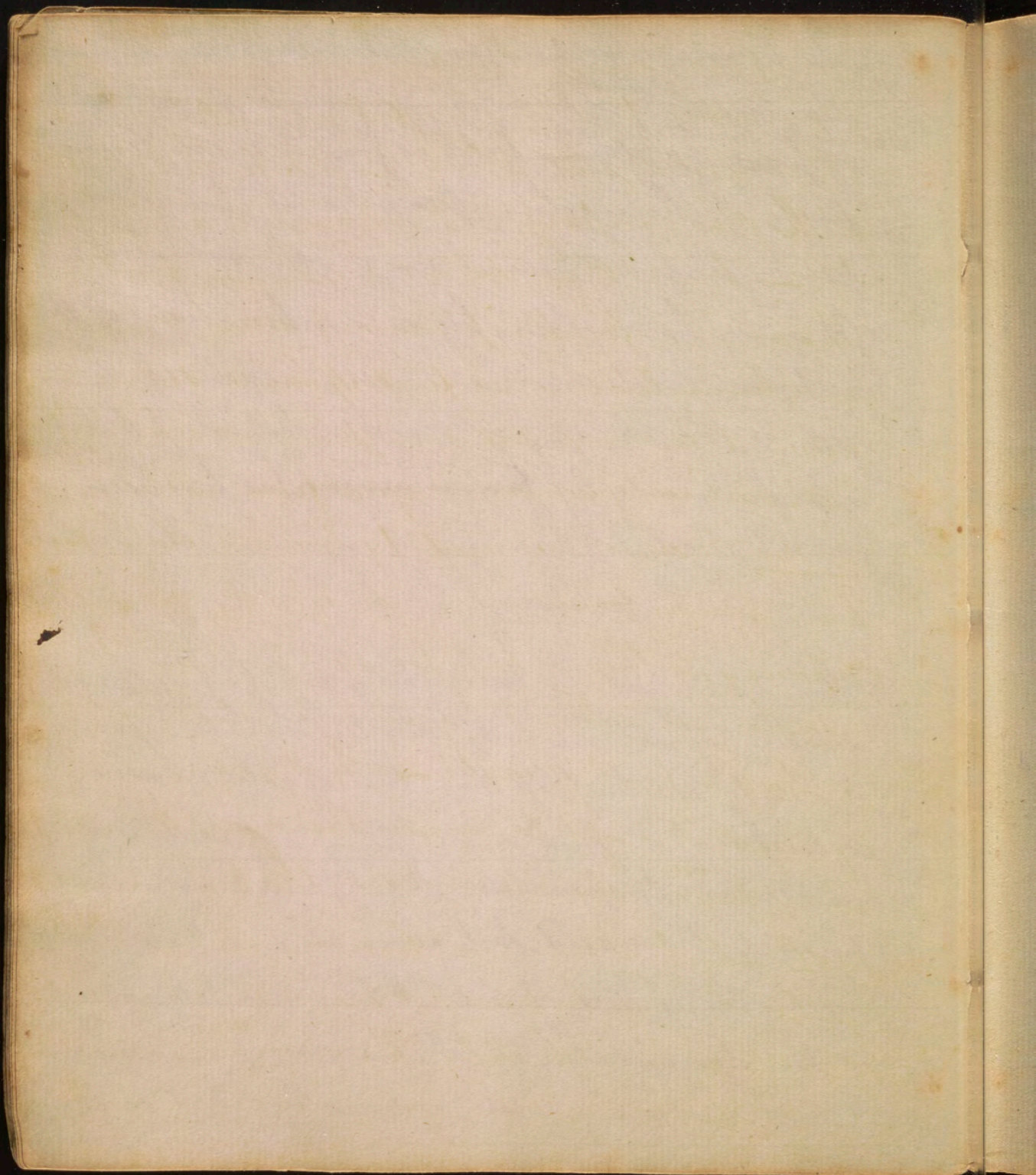


which gold was held, in those days; by saying  
its walls ~~ought to be~~ <sup>should be</sup> ~~1500 miles high~~, and ~~it~~  
<sup>should be built of transparent, or shining</sup>  
of ~~fine~~ gold — Gold is found in different  
parts of the world; especially at Brasil a  
portuguese settlement in South America —  
It may be melted by a combination of the  
nitrous and marine acids called agua re-  
gia, or the royal water — a solution of it may  
also be made by <sup>hepar sulphuris &c.</sup> ~~hepar sulphuris &c.~~ as has been  
mentioned, in treating of inflammable bodies.

## 2. Silver,

This, next to gold, is the most perfect, fixed, and  
ductile of all metals. The tenacity of its parts  
is nearly one half less than that of gold; a silver  
wire of  $\frac{1}{10}$  of an inch diam. being unable to bear  
more than 270 pounds. It is found in many  
parts of the world; but, abounds most in Mexico,  
and other parts of South America, belonging  
to the Spaniards. At Mexico, twenty millions  
of dollars are made annually; But so large  
has





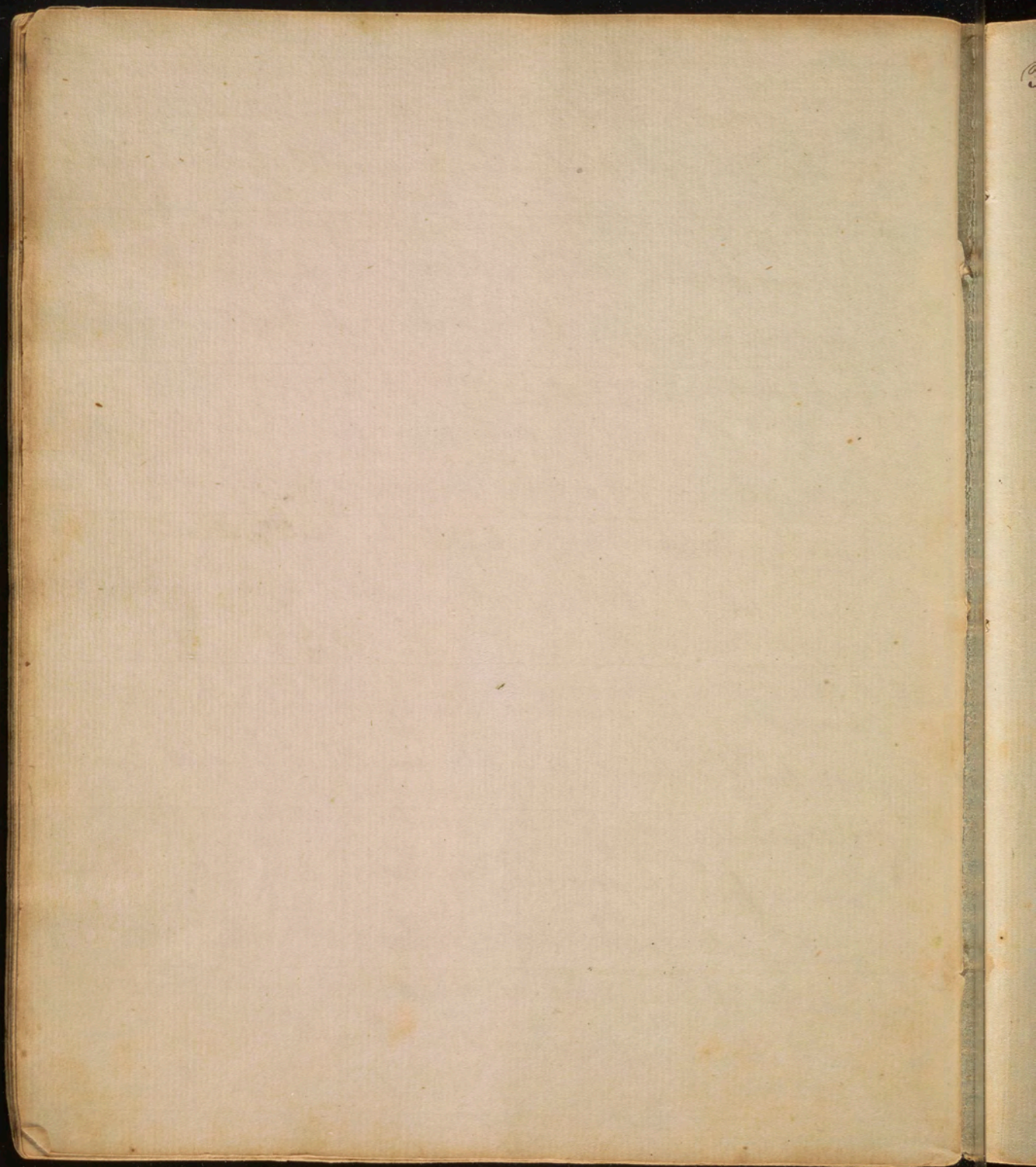


has this redundancy of wealth rendered the Spaniards, that they neglect agriculture and other useful arts, which might furnish them with the necessary, and convenient, articles of life—hence their dollars are drawn from them in exchange for the produce of different countries, in Pennsylvania we find Spanish dollars are received in large sums, in purchase of wheat &c.

A solution of silver in aqua fortis, called lunar caustic, is sometimes used by ladies, to stain their hair black; from red or some other colour not pleasing to them; but, for this purpose, it is necessary to dilute a tea spoonful of the solution in half a pint of water—If it be not cautiously used, it is apt to corrode the hair; therefore, every person <sup>using it</sup> should consider, that the hair with which Providence has covered her head, altho' it may be red, is, nevertheless, preferable to a bald head. The stain, thus communicated to hair, does not continue long.—

3<sup>d</sup>

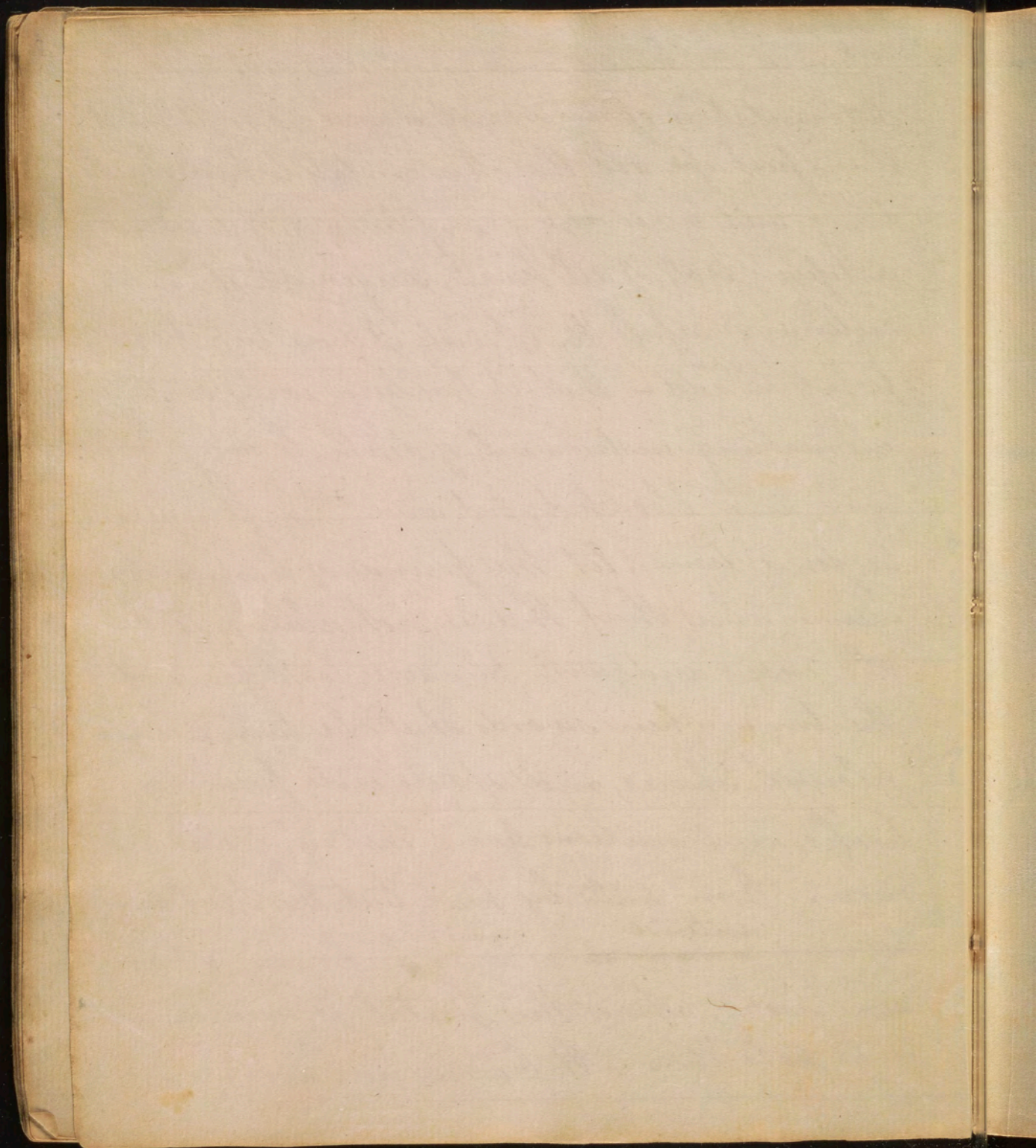






3.<sup>d</sup> <sup>one of</sup> Iron is the hardest and most elastic of metals. -  
this metal is of more real service to mankind  
than, perhaps, all the other metals taken together;  
being used in making implements of husbandry,  
artificers tools, of all kinds, surgeons instruments,  
culinary vessels &c. I wish I were not there  
forced to add - that it has been early employed,  
in making instruments of death, to carry on  
wars and bloodshed; but, since these things must  
be for a time, let the friends of humanity  
remember that this is not always to be  
the case; and, with pleasure, look forward to  
the time when swords shall be turned into  
plough-shares, and spears into pruning  
hooks, and nations learn the art of war no  
more. Iron melts by heat; but the heat must  
be very ~~uncommon~~ <sup>intense</sup>, as may be known at any  
iron works, where this metal is used in cast-  
ing pots &c. - At Carron iron works near  
Ed.







Edinburgh, in Scotland, while the metal was preparing in a reservoir, one of the proprietors ascending a ladder to look into the reservoir the brilliancy of the flame gave him a dizziness which occasioned him to tumble in headlong; some present immediately ran up the ladder, but could perceive no appearance of him, so that he must have been consumed in a moment. — All acids act upon iron, from this, by the application of vitriolic acid, green vitriol, or copperas is made, which is so useful in dying. — Astringent vegetables, and water impregnated with iron, give a dark colour: — hence, the only things requisite in making black, are, <sup>an</sup> astringent vegetable, as white oak bark, or galls, with copperas, and water: — thus ink is made. — Water acts upon iron <sup>corrodes</sup> and rusts it.



*Ami*

*4th*



Iron contains a large quantity of phlogiston; iron filings catch fire on touching them with the blaze of a candle—hence fire is so easily procured from steel by percussion with a flint. It is found every where—It abounds in different parts of N. America and is exported in large quantities.

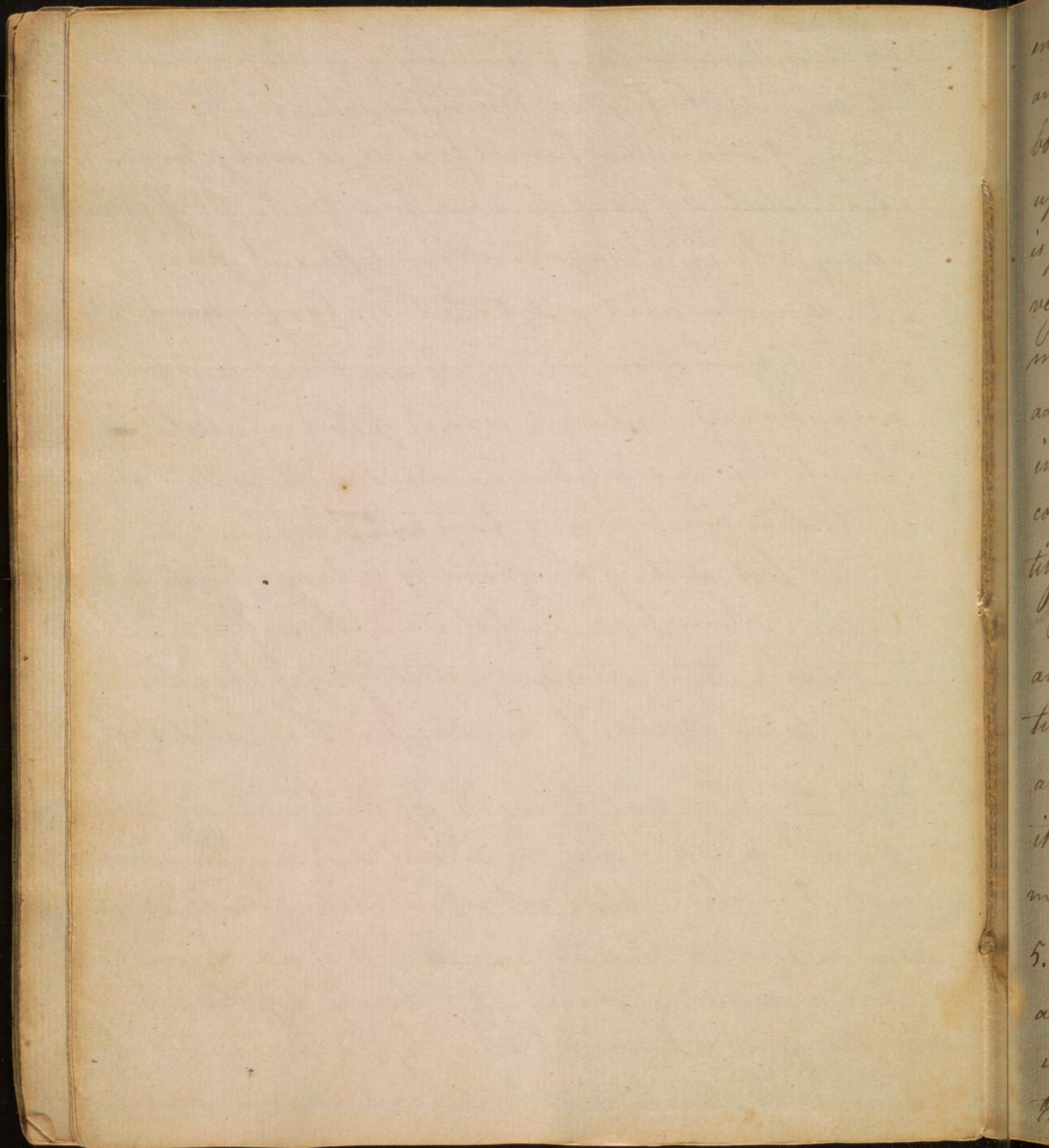
It is diffused in animals and in vegetables; even honey contains some of this metal—

Amist. of

Iron filings and sulphur, moistened with water, and pressed down close, in a few <sup>days</sup> ~~hours~~, expands, and grows hot; and, if the quantity is large, bursts into flame. Iron, by cementation with inflammable matters, imbibes a larger quantity of phlogiston, and becomes much harder: it is then called steel.

4<sup>th</sup> Copper. This metal melts by heat— all acids act upon it; as does water, or moist air— with vitriolic acid it makes blue vitriol, sometimes called roman vitriol, or blue stone; which is of a very caustic and corrosive nature, and being dissolved in water gives a beautiful blue; by adding a volatile alkali, <sup>or</sup> ~~xx~~ spirits of sal ammoniac, a decomposition ensues





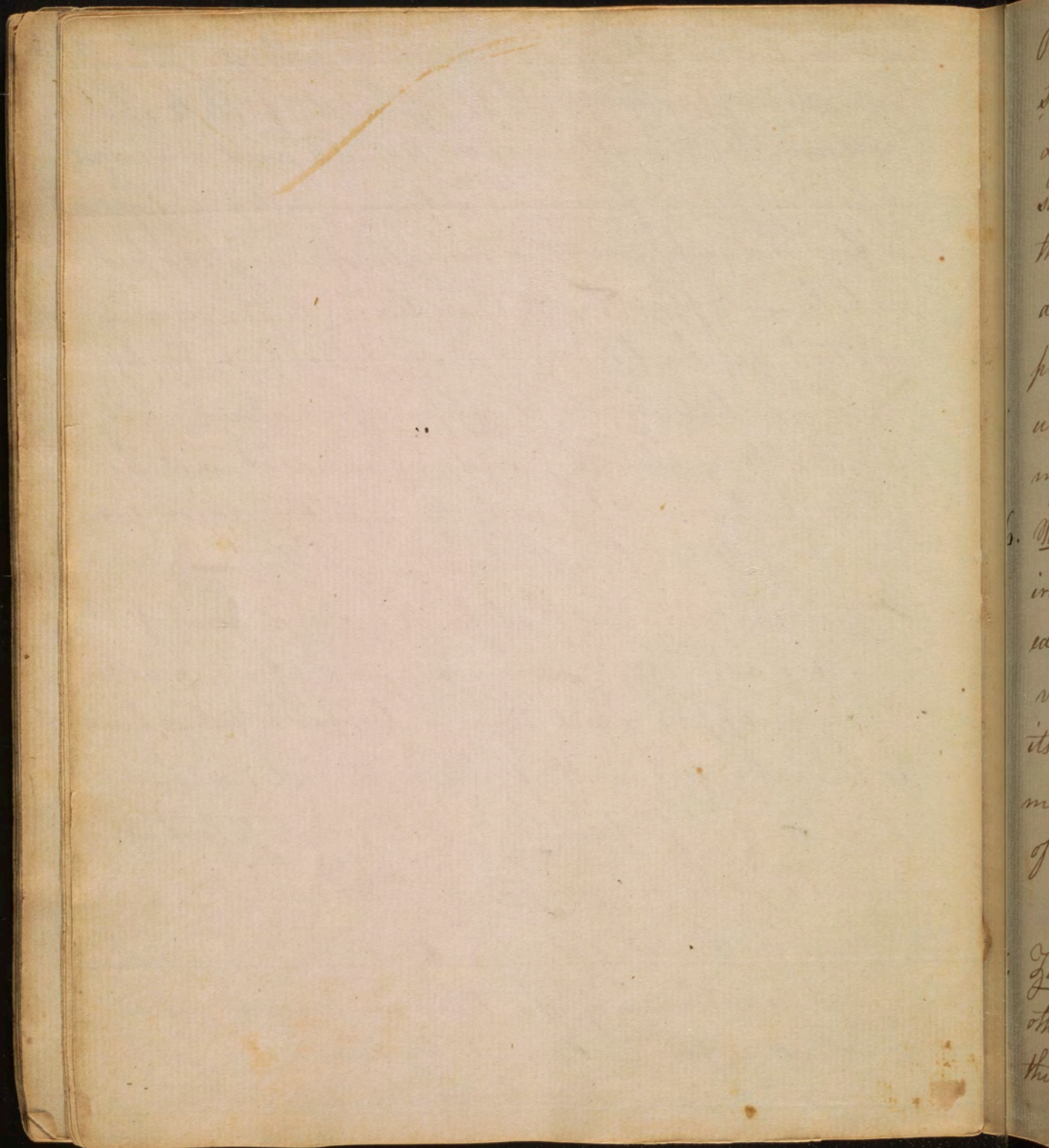


ensues; for the vitriolic acid unites with the alkali and the copper, being thus separated, falls to the bottom. By the action of a vegetable acid, as vinegar, upon copper, a poisonous substance, called verdigris, is formed—hence the danger of using copper vessels—Copper, by the addition of the semi-metal, zinc, becomes brass, pinchbeck &c. by adding a little zinc to copper the colour will incline to yellow; by adding more it will become pale; and by adding a still greater quantity it will at length become white.—

Bell metal, and that for telescopes microscopes &c. and for casting cannon are made from a mixture of copper and tin—Copper is not so hard as to strike fire with flints or other stones—hence it is used, in preference to Iron, for chisels, hammers, hoops &c. in gunpowder works—

5. Lead. This metal is easily melted and calined, and by continuing the heat we procure what is called yellow lead; and, by heating it yet further, we procure red lead, used in painting.







By adding phlogiston to the calx, in any of these stages, it will immediately be reduced to lead again: thus if to a red wafers, which contains some red lead, we add a little grease, and burn them, we will procure a little lead. <sup>acid, especially</sup> All vegetable acids, act upon lead; and produce a sweet, but poisonous, solution, which is sometimes wickedly used to recover sour wines. Printers' types are made of lead and zinc.

6. Sn. This metal, tho' <sup>more</sup> ductile in plates, than iron or steel, yet, is not capable of being extended in wire to the same degree that they are. vegetable acids have no effect upon it—hence, its use in covering over the inside of other metal vessels; as those of copper & lead—of tin and zinc pewter is made.

### Semimetals

1. Zinc. It is chiefly used in compounding the other metals. The vitriolic acid combined with this gives white vitriol, which is used in medicine; and



a  
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and, also, in painting, to dry oil colours quickly—

2. Mercury, or quicksilver, dissolves in acids of every kind; but, not in water; mixed with tin-foil it is used in looking glasses to reflect the rays of light— It unites with, or dissolves, all the metals; except iron— Being mixed with any other metal, it still retains its white colour:— hence, it renders brass extremely like unto silver.— It unites with, and softens, gold: so that a ring may be taken off the finger, if too tight, without filing, by rubbing it with quicksilver; which will render it so soft, that it may be broken, in several pieces, with a persons fingers.—



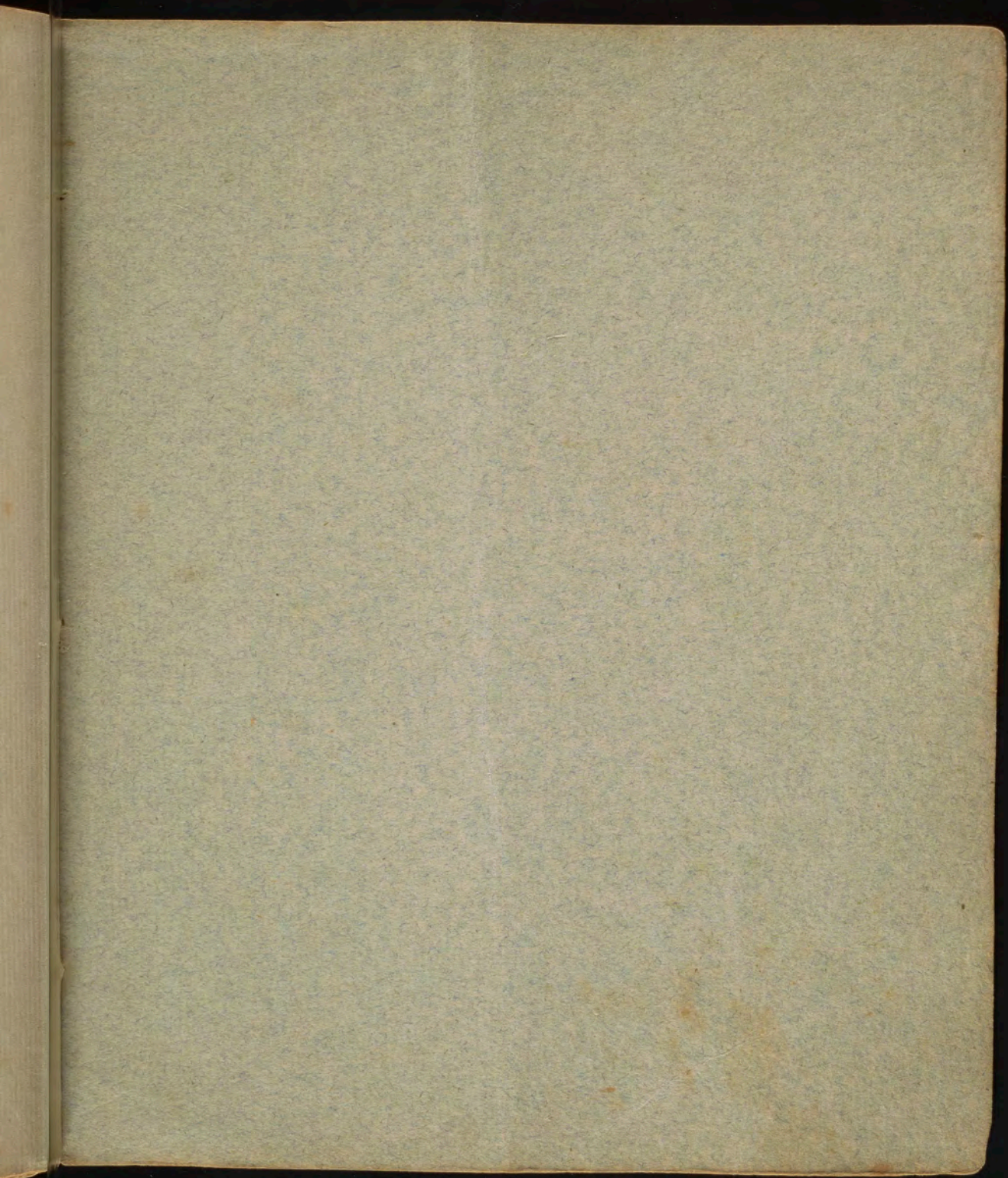
19 : 100 :

13 : 120 : 19

$$\begin{array}{r} 19 \\ \hline 1000 \\ 120 \\ \hline 13 \overline{) 2200} \quad C 17 \\ 90 \\ \hline 7 \end{array}$$

W  
on Sunday the 14 day may  
have been







## The Twelve Signs.

- ♈ Aries, or the Ram.  
♉ Taurus, the Bull.  
♊ Gemini, the Twins.  
♋ Cancer, the Crab.  
♌ Leo, the Lion.  
♍ Virgo, the Virgin.  
♎ Libra, the Balance.  
♏ Scorpio, the Scorpion.  
♐ Sagittarius, the Archer.  
♑ Capricornus, the Goat.  
♒ Aquarius, the Waterbearer.  
♓ Pisces, the Fishes.

## Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

## Money.

£. s. d. q.  
1—20—12—4

## Avoirdupois Weight.

T. C. Q. lb. oz. dr.  
1—20—4—28—16—16.

## Troy Weight.

lb. oz. dwt. gr.  
1—12—20—24.

## Apothecaries Weight.

lb. oz. dr. scr. gr.  
1—12—8—3—20.

## Wine Measure.

T. P. H. G. Q. P. G.  
1—2—2—67—4—2—4.

## Long Measure.

D. M. F. P. Y. F. I. B.  
1—69—8—40—5—3—12—3.

360 Degrees are the circumference of the Globe.

## Land Measure.

A. R. P. T.  
1—4—40—54.

## Dry Measure.

B. P. G. P. Q. P.  
1—4—2—2—2—2.

## Cloth Measure.

Y. Q. N. In.  
1—4—4—24.

## Time.

Y. D. H. M. S.  
1—165—24—60—60.

Thirty days hath September,  
April, June, and November;  
February hath twenty-eight\* alone,  
All the rest have thirty-one.

\* Twenty-nine, every 4th or leap year.

## Numeration.

Millions.	Millions.	Thousands.	Thousands.	Hundreds.	Tens.	Units.
C	X	C	X	T	H	U
9	8	7	6	5	4	3
2	0	5	2	1	4	6
2	0	4	6	8	0	9
4	0	2	5	3	0	0
8	2	0	7	5	3	
6	0	0	9	8		
5	0	0	1			
7	0	0				
9	1					
4						

## Pence Table.

d.	s.	d.
20	1	8
30	2	6
40	3	4
50	4	2
60	5	0
70	5	10
80	6	8
90	7	6
100	8	4
110	9	2
120	10	0

## Numerical Letters.

1 5 10 50 100 500 1000  
I. V. X. L. C. D. M.  
MDCCLXXXVII.

BOOK

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.



No 2  
FOR THE  
YOUNG LADIES' ACADEMY,

Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—PROV. iv. 1, 7, 8, 9.  
If sinners entice thee, consent thou not.—PROV. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE's Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Miss MORE's Essays.*

If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time.

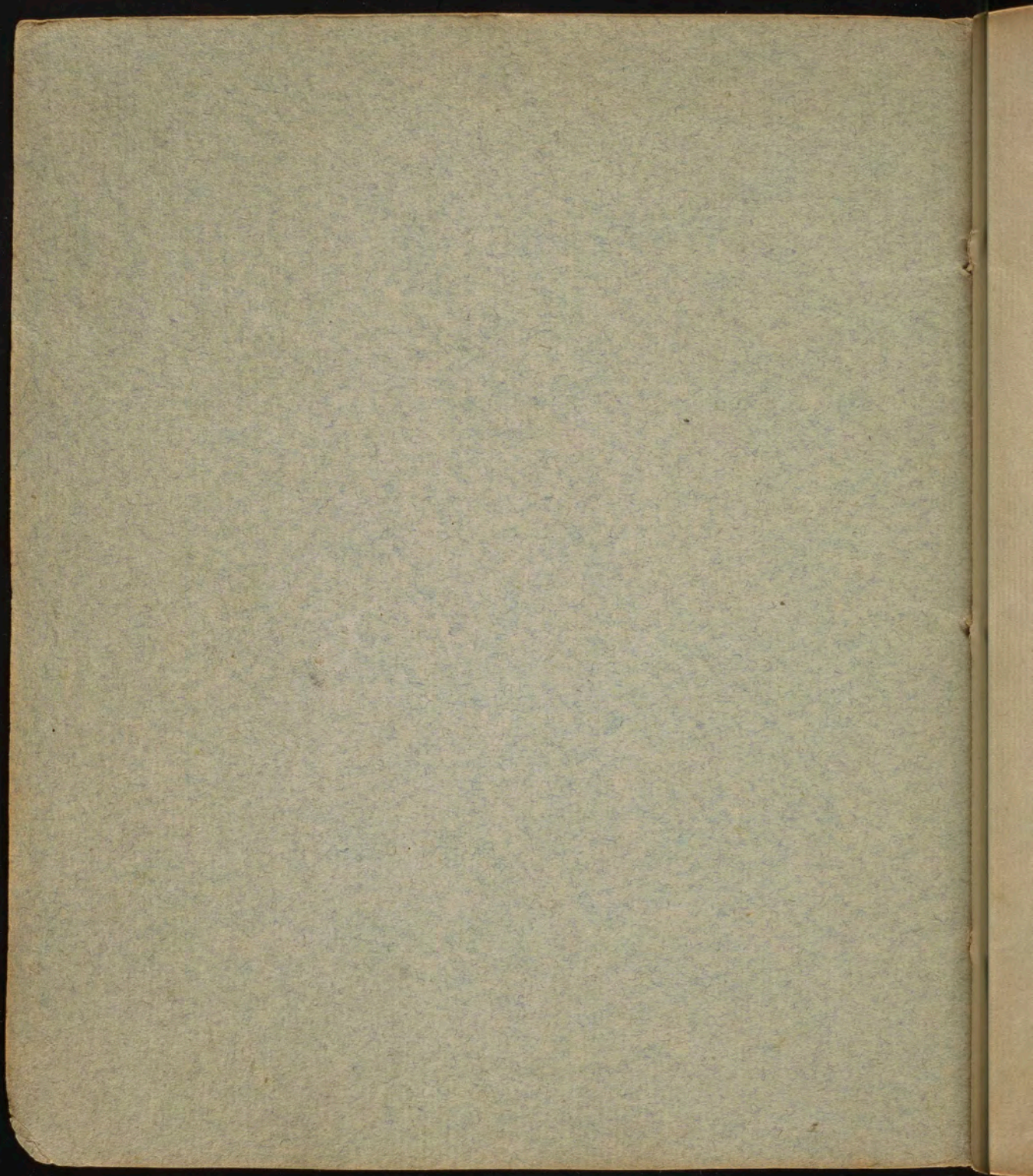
Pleasant, indeed, are all the paths which lead to polite and elegant literature. You, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value.—Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

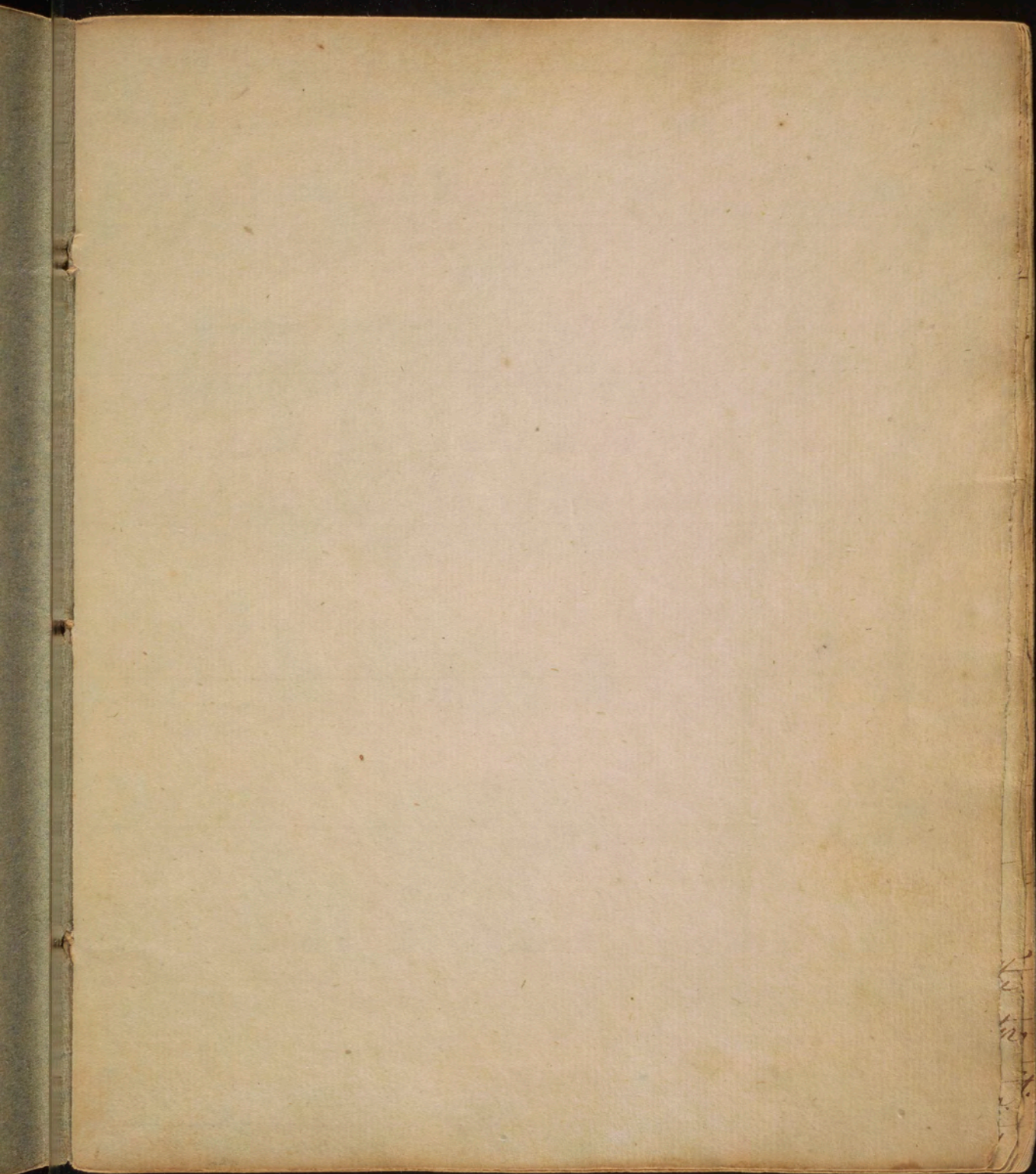
That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are, perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—KNOX.



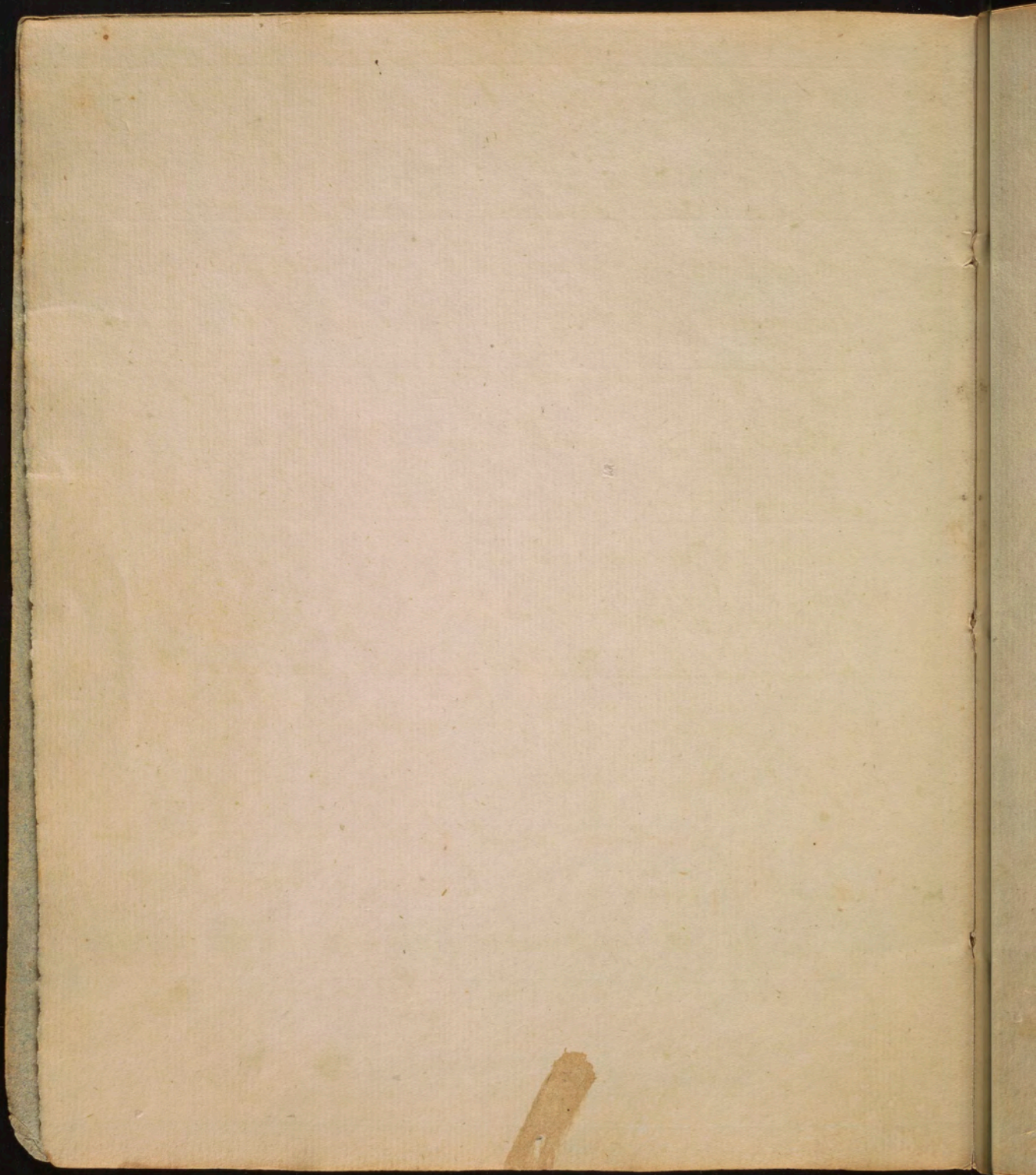












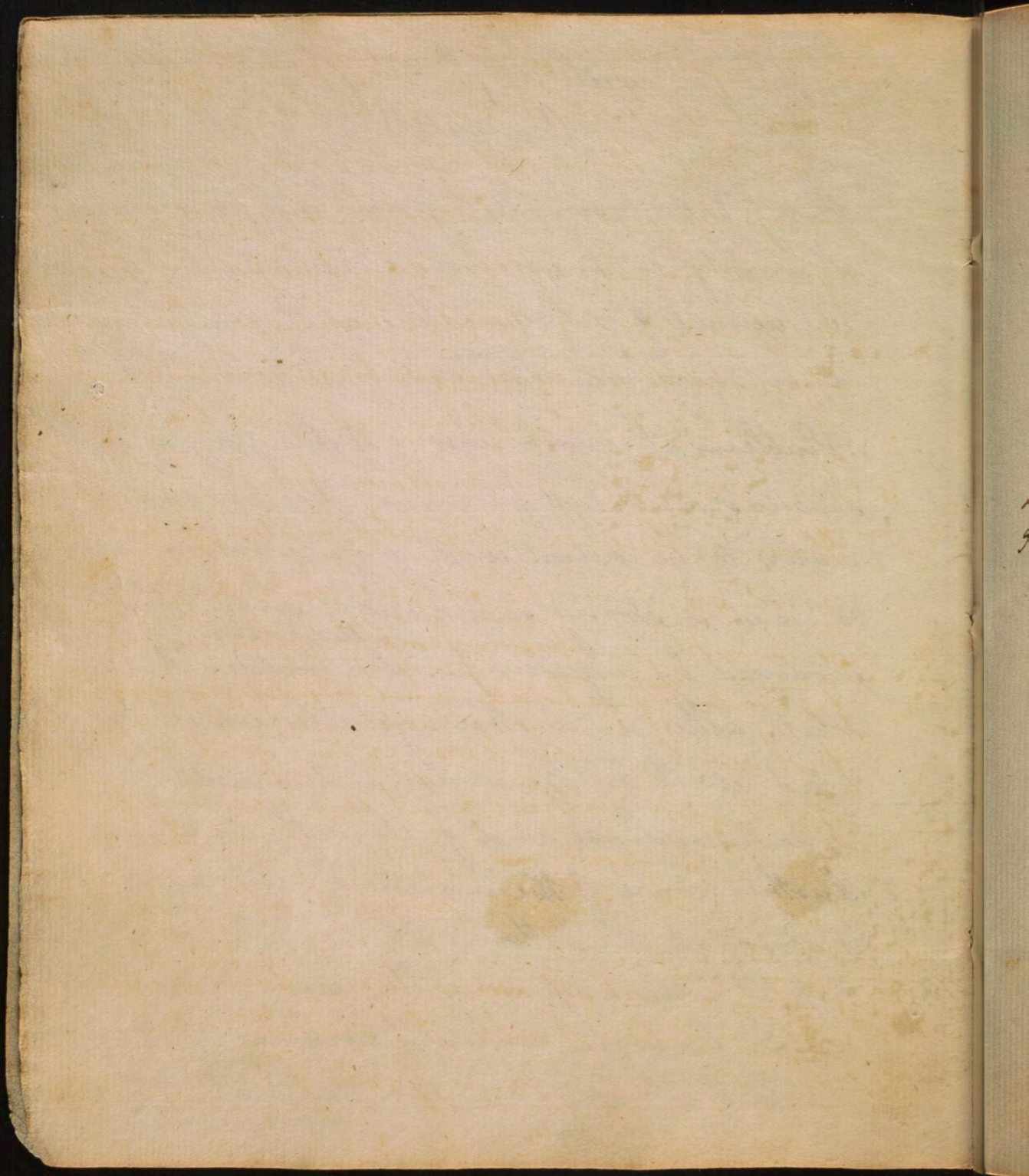


Secture 7.<sup>th</sup> 1  
On waters.

There is but one simple, original, and pure water; all variety in waters being occasioned by impurities received from a mixture with foreign matters; and there are visible, or invisible.

1. Visible — at certain seasons of the year, after a shower of rain has fallen, we often perceive the waters to be covered with a yellow scum, and to emit a strong sulphureous smell: this is produced by a yellow powder, <sup>called pollen,</sup> contained in white lilies and other vegetables, which being tossed about by the winds, and carried up in vapour, condenses, and falls with rain. —
2. Another cause of the variety of colour in water is sand at the bottom; where water is not very deep, it will appear of the same colour as the sand; hence, the red appearance of the water, in the red sea, from red sand at its bottom.







3. Waters frequently receive their apparent colour from a mixture of small animals, which are sometimes invisible to the naked eye, but may be viewed by the assistance of a microscope. Anson, in his voyage round the globe, found a part of the South sea red as blood; which, upon examination, appeared to be occasioned by innumerable swarms of small red animals, mixed with the water.

4. Water receives a green colour from vegetables, growing therein; these, in stagnated waters, produce a green scum on the surface, and are extremely serviceable, in ~~preventing~~ <sup>correcting the</sup> noxious vapours which arise from the ~~from being exhaled,~~ <sup>water.</sup> and rendering our air foul and unwholesome, thus good arises out of evil — or rather, what is a seeming evil, is a real good —

Invisible causes of waters impurity —

1. Salts — almost all ~~xxx~~ waters contain a considerable quantity of salt: I have extracted no less than two grains of salt from a quart of



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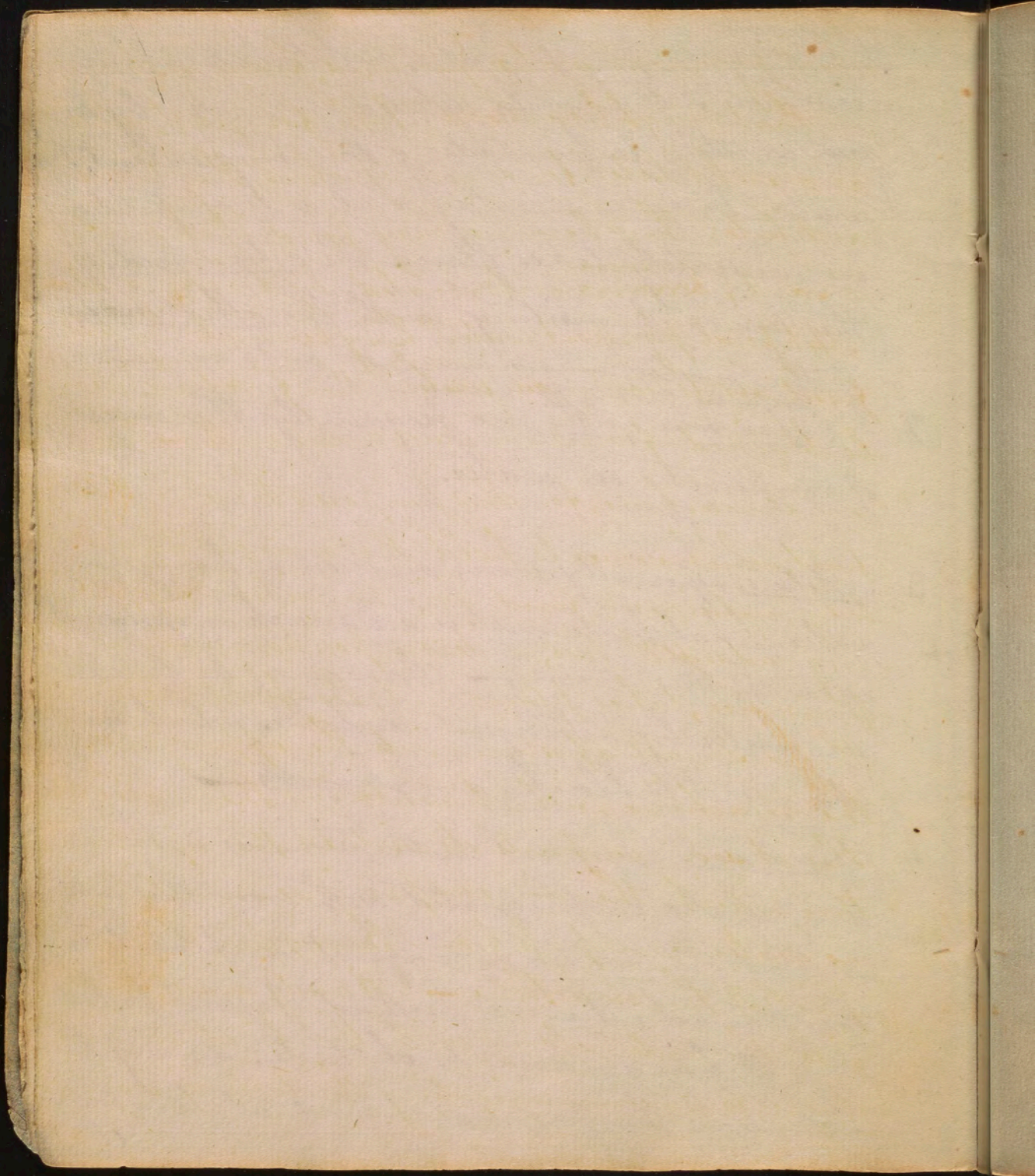
the <sup>purest</sup> common pump water, in Philadelphia —  
common salt may be detected in water by lu-  
nar caustic; for, on adding this ingredient, the  
water becomes muddy, and a decomposition  
immediately takes place — the nitrous acid, of  
the lun. caust. uniting with the alkaline salts  
of the ~~water~~ — common salt, & the muriatic acid  
with the calx of <sup>the silver</sup>.

2. Calcareous earths are frequently the cause  
of impurity in water.

3. Metals, especially iron, occasion a change in  
water. Chalybeate waters are much impregnat-  
ed with this metal. — Iron may be detected  
in water by astringent vegetables, <sup>such as oak galls</sup> which will  
change it to black, as oak galls. —

4. Fixed air. Pymont water abounds with this,  
and is also impregnated with iron; this water  
is used in medicine against complaints in  
the stomach; it serves, instead of yeast, for bak-  
ing; it has an acid brisk taste; during the  
late war the troops stationed at Saratoga  
found



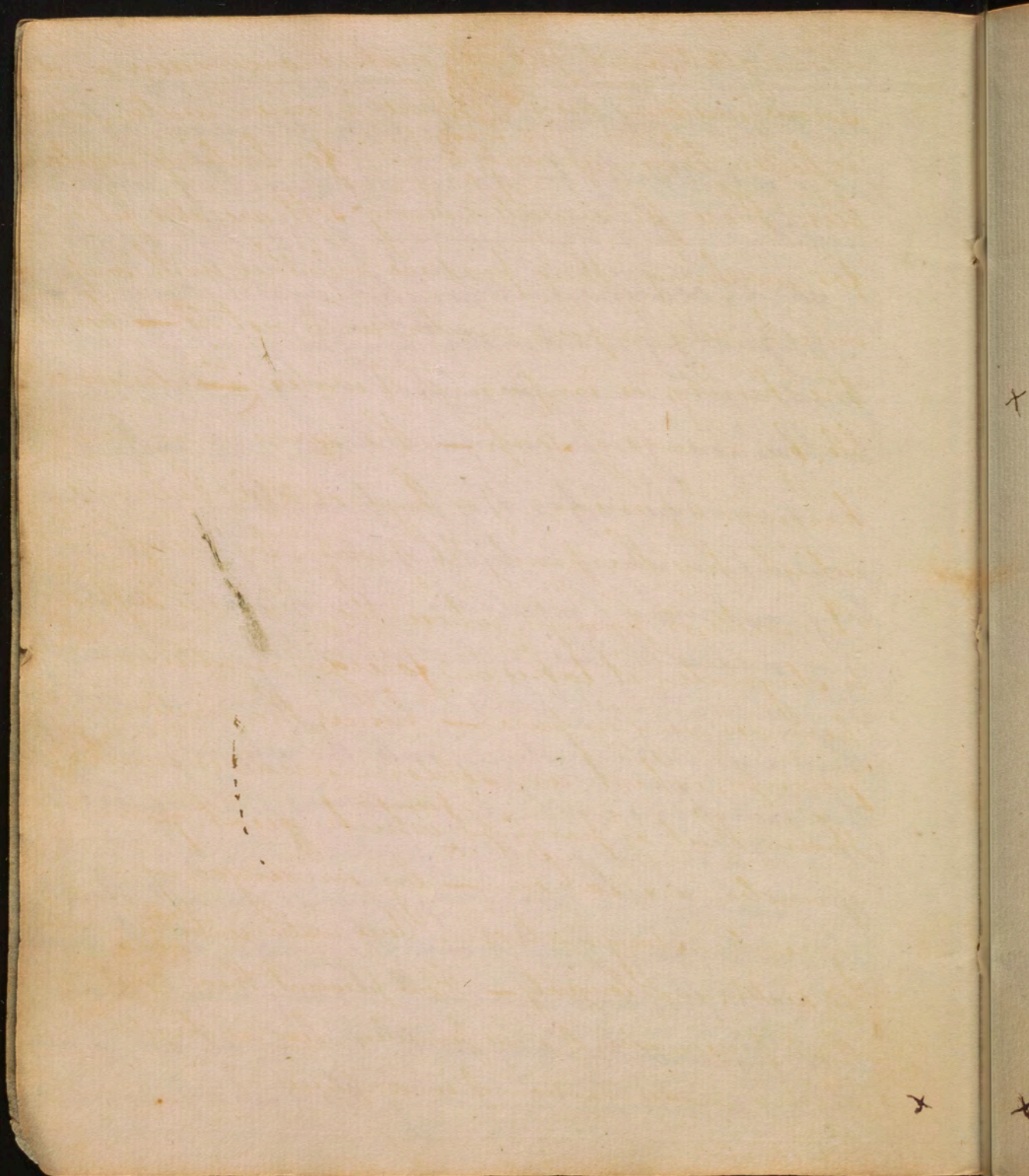




used pyrmont water, <sup>4</sup>procured, from a spring  
in that neighbourhood, both for yeast, and  
as a substitute for rum, of which they were  
destitute; they became very fond of it, and it  
is said, ~~became~~ <sup>were</sup> intoxicated by drinking it.

Artificial pyrmont water <sup>is often</sup> ~~may~~ be made, by adding  
fixed air to common water; the fixed air may  
be obtained from any calcareous earth—thus,  
in a machine, for this purpose, there is a lower  
part, which serves to hold the marble dust, or  
body containing fixed air; the vitriolic acid be-  
ing added to this, a decomposition, with an ef-  
ferescence, takes place; and, the fixed air escapes,  
thro' a small aperture, into the upper part of  
the machine, which contains the water; to  
this it soon imparts its virtue; the aperture,  
thro which the air escapes, is so small that  
no water can pass from the upper, to the lower,  
part of the machine—A rusty nail, thrown  
into the water, along with the fixed air, is also  
of use, to in communicating the taste of iron to it.

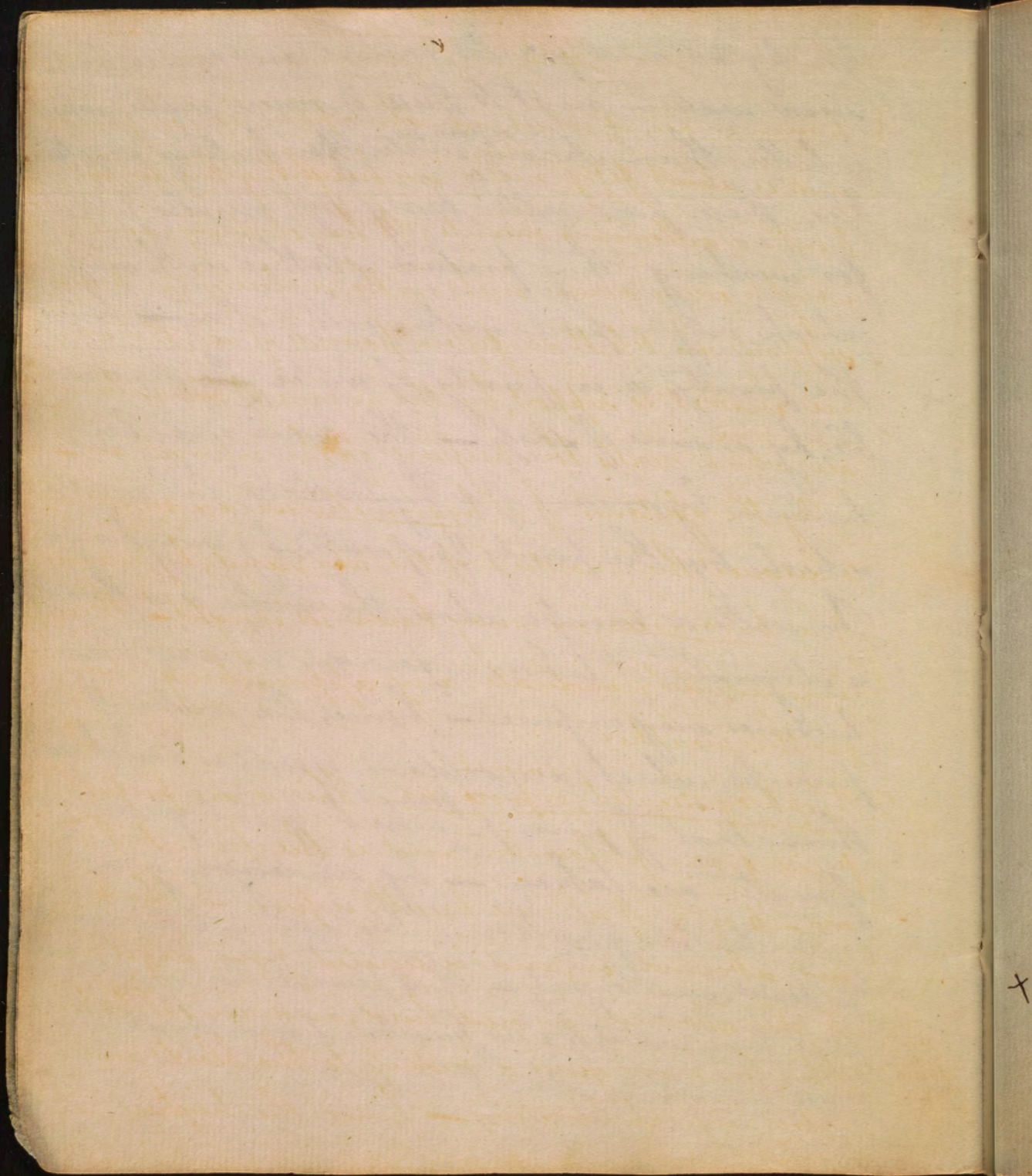






5  
The lightest, and purest, waters are rain, and  
snow water — next to these is river water, which  
is better than spring <sup>or perhaps</sup> water for boiling vegeta-  
bles; these pure waters, being soft, are also fittest  
for washing; they produce a lather with soap,  
which very impure water will not do: — hence,  
x the purity, or impurity, of water <sup>is</sup> ~~can~~ discovera-  
ble, by means of soap — the same may be  
known by means of a Hydrostatic balance,  
which tries the purity of water, by weighing it.  
In wells, or pumps, where the water is suffered  
to stagnate, it takes in foreign matter and  
becomes very impure — hence, the water of  
pumps, which are seldom used, is much worse  
than that of pumps <sup>from</sup> which great quantities  
of water are taken — by undergoing a  
greater stagnation. Pure water contributes much  
to health, and longevity — How pleasant then must be  
that pure water, of new Jerusalem, clear as crystal. &c!  
x which is made mention of in scripture





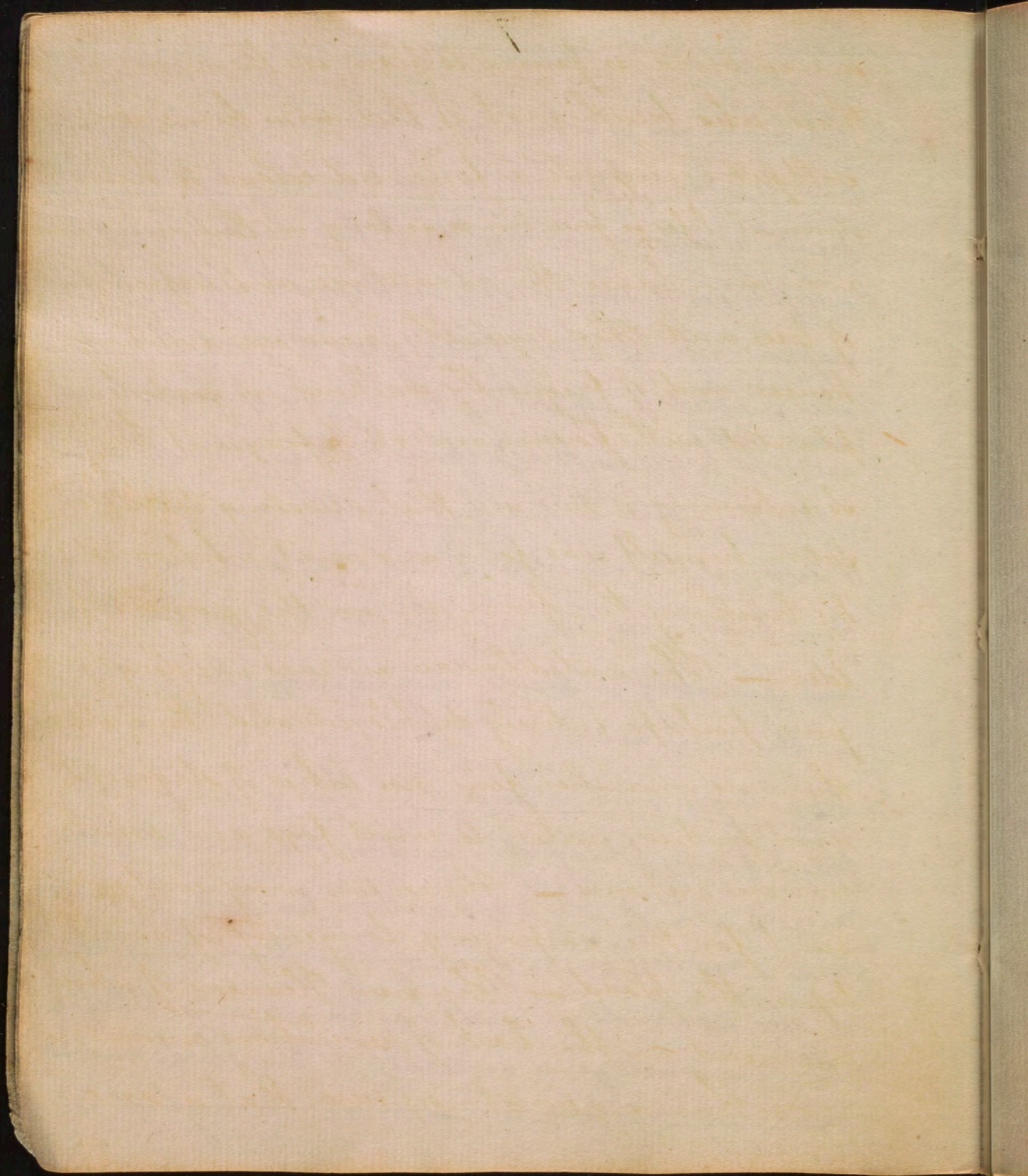


1. Common air, of which our atmosphere is composed, and is about fifty miles in height; of this air we breathe a gallon in a minute; It has elasticity, and weight; every square inch on the surface of our bodies supports no less than fifteen pounds of air; this we are enabled to support, by the means of ~~our~~ <sup>the</sup> internal <sup>in our bodies</sup> air, which resists the pressure of the external air.

By the assistance of a hygrometer, we are enabled to discover the moisture of the air; and, by means of a barometer, we may know its weight - these immediately indicate any approaching change in the weather.

2. Dephlogisticated, or <sup>empirical</sup> pure, air - This is air perfectly freed from phlogiston, and is the purest of all air;  $\frac{1}{4}$  or  $\frac{1}{5}$  of all we breathe is pure - This pure air abounds in, and is secreted from vegetables: it also abounds in red lead, and in saltpetre. This pure air gives a redness to the blood; and is extremely exhilarating - hence the highest co-



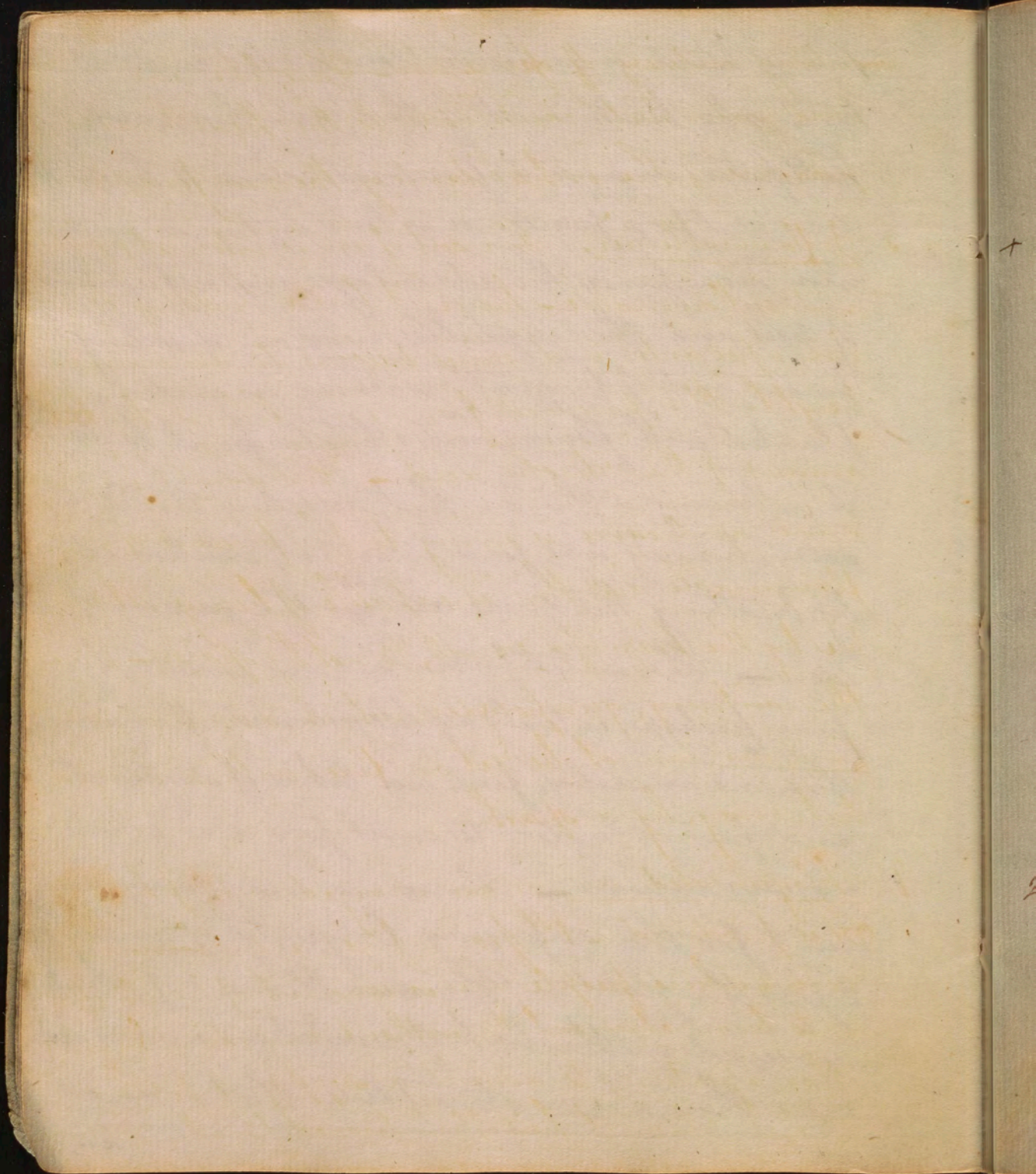




7  
soured blood is found to flow in the veins of  
those, who breath most of this air— hence, also,  
salt petre imparts a fine red colour to hams &c.  
Animal life <sup>exists</sup> is five times as long in this as in com-  
mon air— hence, the advantage, and refreshment,  
of trees, and other vegetables, near our dwelling  
houses; and of frequently walking in gardens,  
planted with flowers, and other fragrant herbs.

So enlivening is this air that, according to Milton,  
Satan himself was, for a moment, exhilarated,  
by breathing the pure air, <sup>near</sup> ~~in~~ the garden of  
Eden— The antediluvian air was exceedingly  
pure, perhaps, entirely dephlogisticated; there were  
then no marshes, fens, nor lakes of stagnant,  
and putrid, water; to emit fogs, and exhale  
noxious vapours— Hence we may easily ac-  
count for the surprizing longevity of men  
before the flood— The new Heavens of which  
we read in the book of revelations means no  
more than a new atmosphere; that is one







consisting entirely of pure air - This, like the pure water, will <sup>probably</sup> contribute to the health, and pleasure, of the inhabitants of the new Jerusalem.

+ 3. Inflammable air, This sort of air is extremely light and inflammable - hence it has a tendency to rise upwards; and raises balloons to an enormous height - It is procured from iron filings by ~~the~~ means of the vitriolic acid - Fire damp in mines and caves is owing to the presence of inflammable air; this is capable of being set on fire by the blaze of a candle, &c. not by sparks - On the contrary, gunpowder, which abounds with fixed air, cannot be set on fire with a blaze but, may, by a spark.

4. Phlogisticated air, or air charged with phlogiston. It is produced - 1<sup>st</sup> from fire, as in ~~some~~ <sup>a</sup> close room, where people are so ignorant of its ill effects, as to burn charcoal &c. without any chimney, or other aperture, to admit a supply of fresh air. in such places it has often proved fatal; for



9  
Introduction

I come now to deliver <sup>to</sup> you agreeably to my  
promise a few lectures upon the application  
of Chemistry - Nat. Philosophy - Medicine &  
Astronomy to domestic & culinary purposes.  
- This is an important part of Science,  
and absolutely necessary to a physician.  
It includes many things that are essential  
to the preservation of health, & the prevention  
of diseases. It has for its object, the convenience  
& pleasures of life, and those <sup>shd</sup> come under the  
knowledge & direction of a physician. ~~for~~  
~~the defect of our~~ ~~the~~ They will serve to  
extend the empire of our Science, & to  
~~also~~ ~~encrease~~ the dignity & influence of  
the Medical Character.



10

for phlogisticated air will neither feed flame  
nor support animal life - 2.<sup>d</sup> air becomes phlo-  
gisticated by the breath of animals; and this air  
is by no means safe to be breathed again, until  
it has been purified, by mixing with fresh air.

5. Fixed air, which abounds in calcareous earths, as  
lime, marble &c. from these it may be separated  
by the nitric acid - This air abounds also in  
cellars &c. to which fresh air has no access - it is  
extremely dangerous to go into cellars where this  
air is found - a person, going into such places,  
should hold a candle before him; if it burns  
clearly, he may venture in, with safety; but  
if it is extinguished, or burns dimly, he should  
start back instantly; otherwise, he is in the most  
imminent danger - a chimney in a cellar ef-  
fectually prevents the bad effects of this deadly  
air, by furnishing a constant supply of fresh  
air - In some places this air arises from caves  
in



Man <sup>came</sup> ~~was~~ originally into the world  
 like the ~~f~~ beasts of the forests - but under  
 very different circumstances. His weakness  
 rendered a shelter necessary for him from  
 the inclemencies of the weather, and his  
 numerous duties - Obligations - Inclinations  
 rendered ~~certain~~ form - convenience - &  
 pleasure necessary for him in the construction  
 of this shelter from heat - cold - <sup>wind &</sup> moisture.  
 and to the first necessities <sup>of life</sup> & philosophy  
 were first employed in the construction,  
 of a house  
 & this therefore shall be the subject of our  
 first lecture.

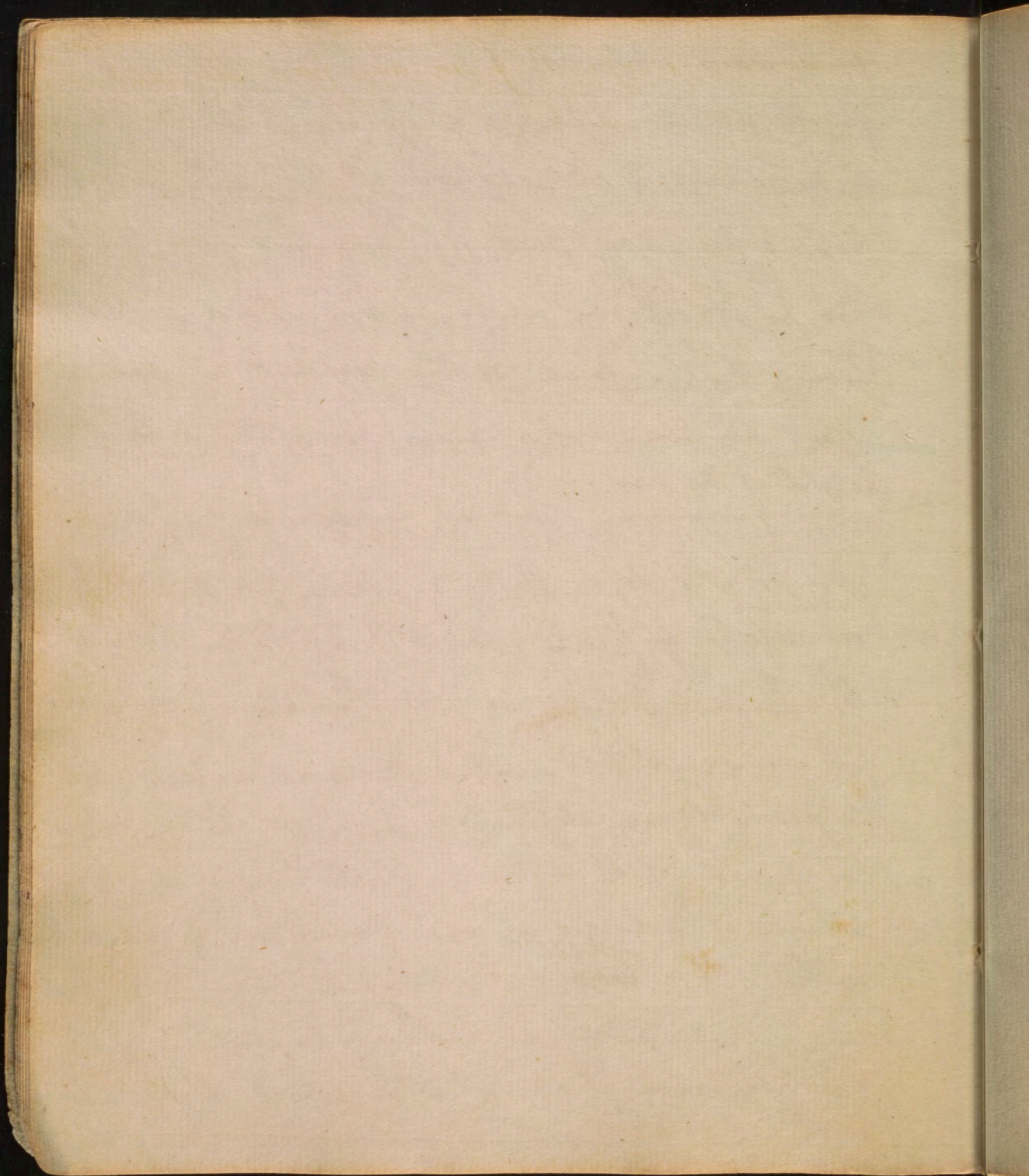


in noxious vapours: from a pit, called the  
grotto del cane, near Naples, in Italy, there  
is a constant exhalation of this air, which  
kills every dog that approaches near to it,  
for as it seldom rises more than a foot  
or two from the surface of the ground, it does not  
affect animals that can breathe above the  
height of the air.

Upon fixed air, in the charcoal, used in making  
gunpowder, depends the explosion produced by  
its catching fire. And it is also the basis of  
the pulvis fulminans, or thundering powder.

This is sometimes used, in theatrical amusements,  
to produce an artificial thundering &c. It is  
composed of three parts of nitre, two of the dry  
alkali of tartar, and one of sulphur, ground to-  
gether. If a <sup>small</sup> ~~little~~ quantity of this powder be laid  
on an iron plate, and slowly heated, it will  
explode, when it arrives at a certain degree of heat  
with astonishing violence and noise - owing to the

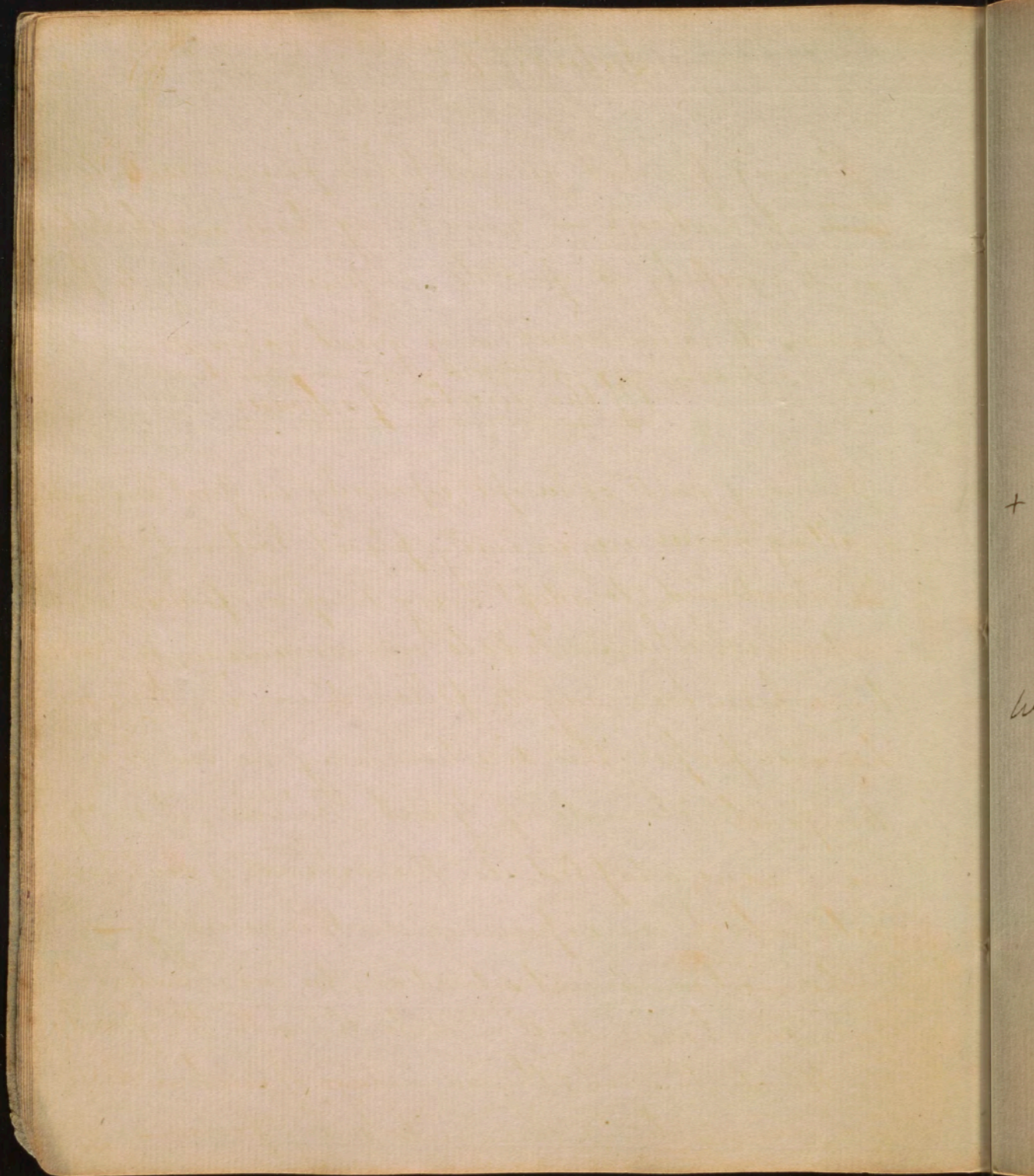






the sudden escape of fixed air, from the alkali.







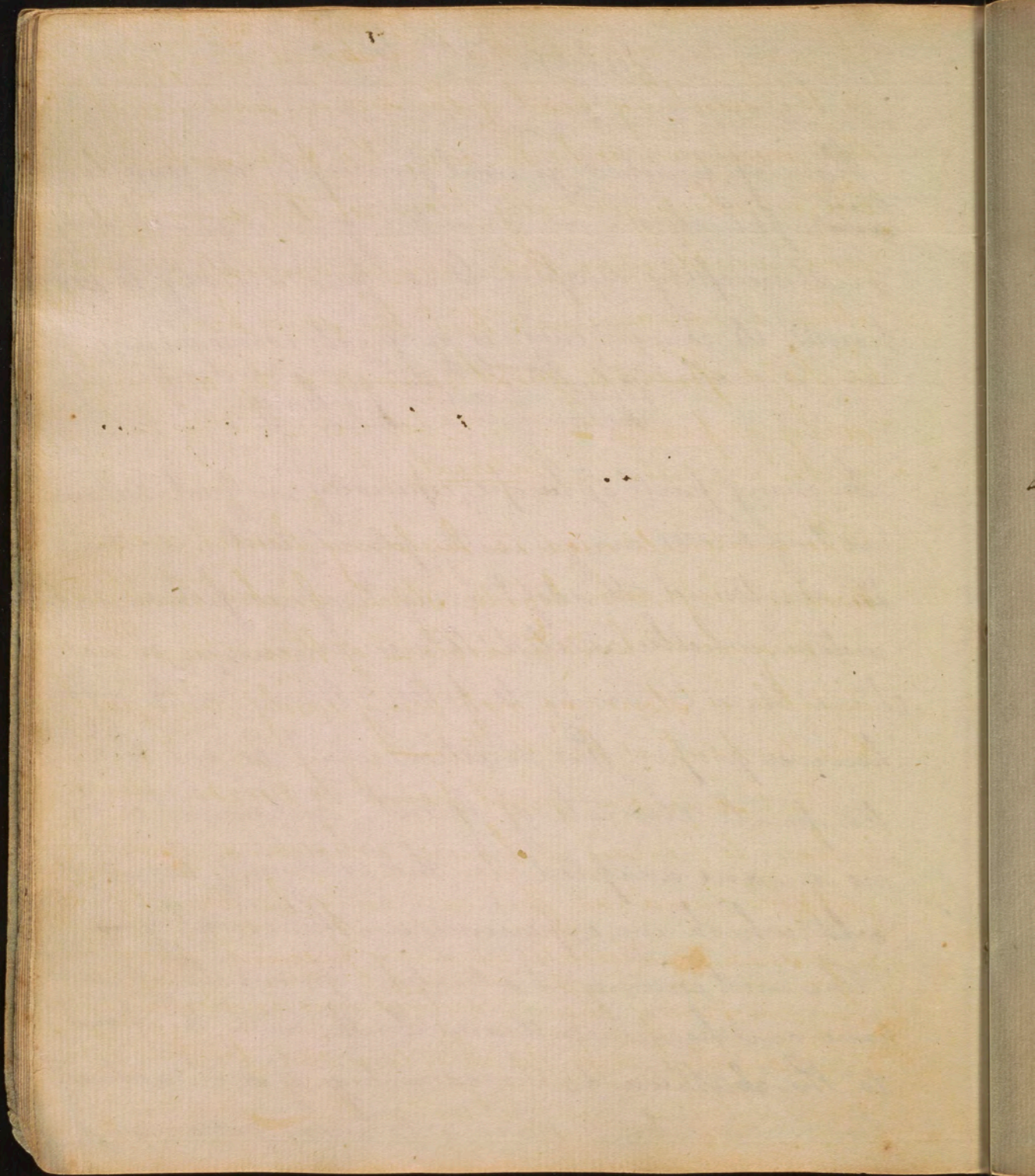
Lecture 8<sup>th</sup> 13

Having finished <sup>our</sup> general principles we come to ~~this~~ <sup>their</sup> application. — Considering how much duty and necessity conspire to confine a lady to her house, its convenience is of great consequence to her. I shall begin ~~therefore~~ <sup>with</sup> any account Of the direction of a house.

+ In many parts of Europe, especially in Great Britain, dwelling houses are, generally, placed East and West. ~~We~~, accustomed to adopt every European fashion, and custom, whether suited to our convenience, or not, we have been too ready to follow them in this; for, however proper this direction may be, in the temperate climate of Great Britain, it is by no means adapted to the extremes, of heat, and cold, which we experience in this country. —

The most convenient situation, for our climate, is to have our houses North and South; with the front to the Southward; the advantage of such a direction, in winter, is obvious to every person. —







It may be objected that we <sup>14</sup>should be exposed to the scorching heat of the sun in summer; if this even were to be the case, the fine southerly breezes, which generally blow at this season of the year, would more than make amends for the other inconvenience; but the sun's beams may be kept off, in a great measure, by awnings or by a piazza - should be defended by trees from scorching. Materials.

The materials used in building houses, are - Wood, in logs, or in boards; Stone; bricks; and mud, called in England Cob's & marble; - of these the most durable is stone, as not being easily destroyed by fire &c. next is brick &c. -

But, since one great point to be considered, is, how to render a house wholesome and comfortable; and, as this can only be done, by using such materials as may prevent damp, by absorbing the moisture; no material, in this country, is preferable to wood, for that purpose; it being very absorbent -

Stone



+ When plastered, the moisture is precipitated  
by the cold, & settles on the wall -

# Crowded rooms unhealthy - especially  
with candles, & why - from phlogisticated  
Air:

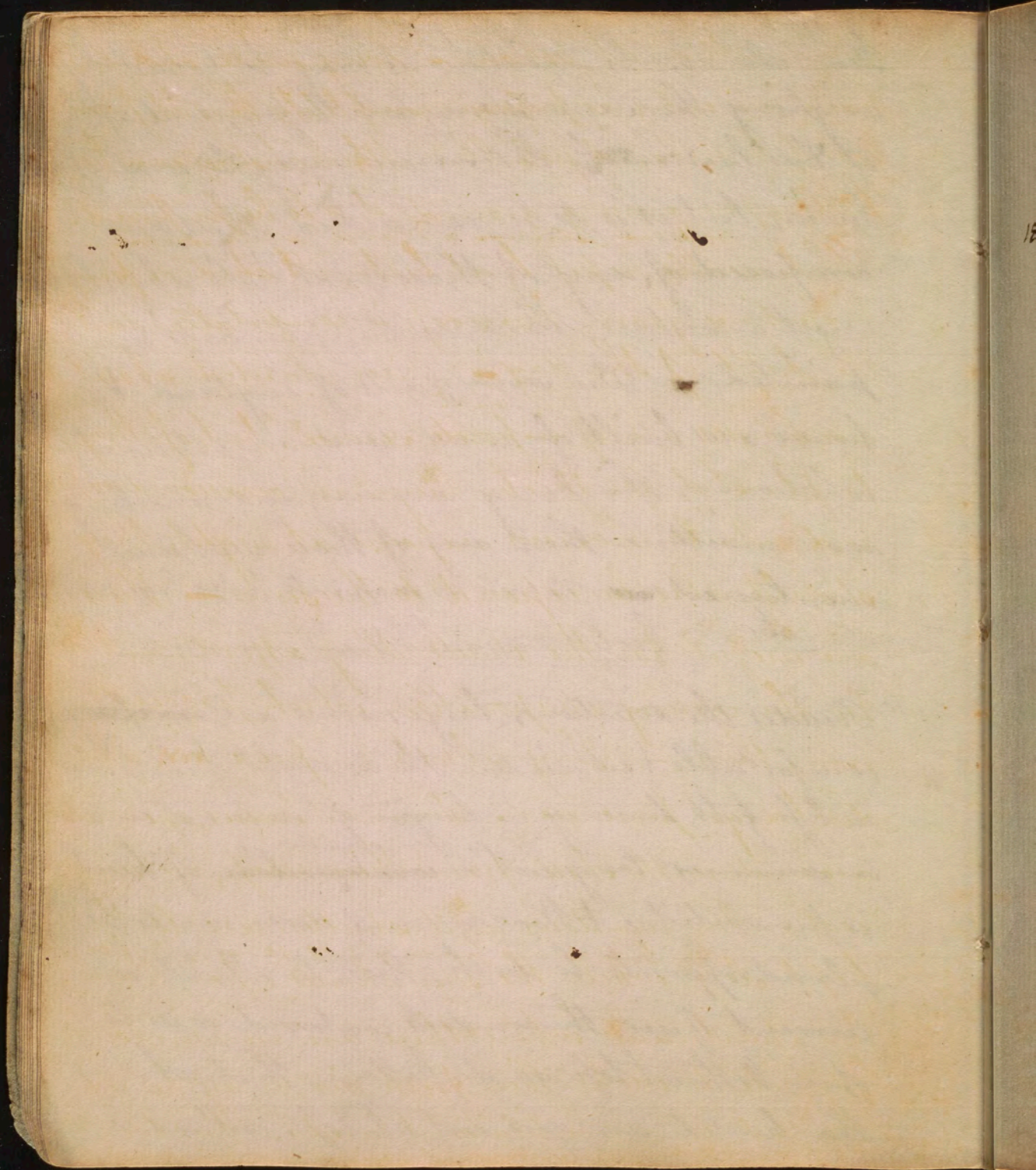


15

Stone also absorbs moisture as may be proved by weighing the same stone, both before, and after, it has been ~~used~~; the same may be said of bricks; but it is to be remarked that a wall composed of any of these materials absorbs most moisture, when neither plaistered nor painted. + In some parts of England &c. houses are built of mud; and are extremely wholesome, this being warmer, and absorbing more moisture than any of those we have mentioned. — The mud is made into large lumps called cobs. Cool in summer, & warm in winter.

+ Besides the direction, large rooms are ~~very~~ comfortable (in winter, the draught of cool air is less felt, having a larger space to act in) & in summer too great a <sup>collection</sup> combination of heat is prevented. + Windows and doors are to be placed opposite to each other, to attract a current of air; the windows contrived so as to open both at top and bottom; that, while the heated air goes out at top, cool air may <sup>be</sup>

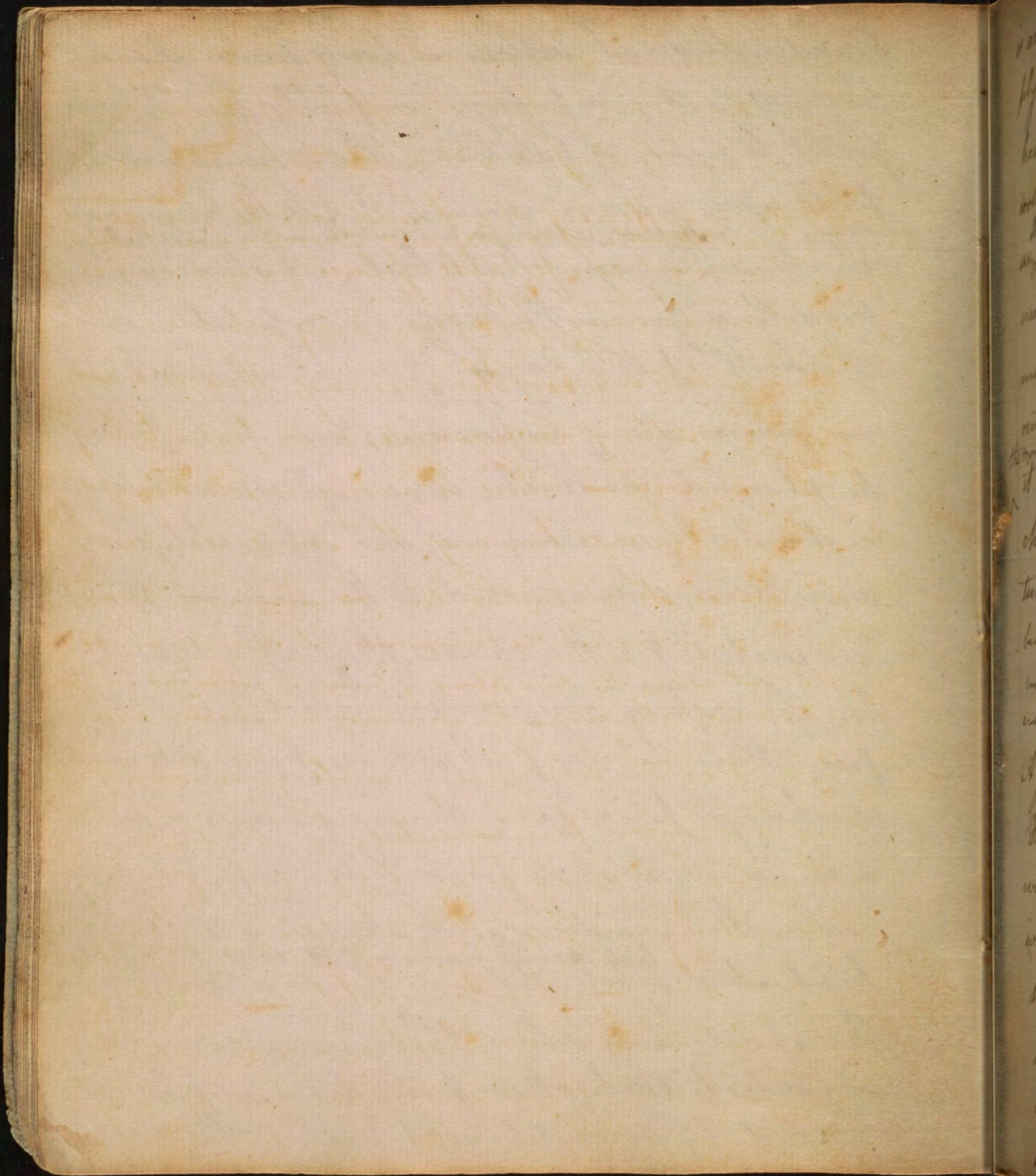






be admitted at <sup>the</sup> bottom - <sup>16</sup> Every house should  
have an entry or passage completely thro it, from  
front to rear, if possible. Where houses can be  
built upon a rising ground it is to be preferred.  
<sup>18 inches</sup> ~~cross~~ <sup>space between</sup> a double wall - ~~useful~~ -  
Thick walls, <sup>great</sup> ~~repel~~ heat best. A shed, or piazza,  
projecting from the roof, is comfortable during  
the heat of the day. Trees planted about  
our houses are of <sup>great</sup> infinite service; but, if they  
be planted too thick, they will occasion damps  
and exhale noxious vapours at night; they  
should also be exposed to the sun. - These  
are useful for the shade they afford; and  
for the cooling evaporation which proceeds  
from them. - They absorb impure ~~air~~ and  
discharge pure air. Summer houses, open all  
around, with sheds from their roofs, are very  
cool. The windows and shutters are to be  
kept close while the sun shines upon them, <sup>but opening from 7 till 10 or 11 o'clock.</sup>  
In apartments where there are no windows  
opposite to each other fresh air may be ad-  
mitted by a ventilator, placed in the door, <sup>which</sup>







17.  
is an instrument so contrived as to furnish a supply of fresh air while it suffers the impure, or heated air to escape. <sup>a wear is ~~gas~~</sup> A high ceiling promotes coolness in suffering the heated air to rise above <sup>the most ~~stagnate~~ of winds or opening even in it.</sup> us. The most comfortable place in a room is near the chimney; for, from 8 or 9 o'clock in the morning to 5 or 6 in the evening, there is a current of air setting downwards; and from 6 to 9 <sup>in the morning</sup> it sets upwards. This is owing to the air of a chimney always having the same temperature; hence ~~it~~ when the air <sup>is</sup> warmer above than  $\frac{1}{2}$  air in the chimney, it descends by its weight; but when the air above  $\frac{1}{2}$  below is cooler, as in the evening & night, the air in the chimney being lighter ascends. A floor of earth, bricks, or marble gives coolness. There is a curious fan, invented by Mr. Bram, with which a lady may keep herself cool, while sitting in her chair, by the motion of her foot only. — By night — Matrafes are cooler than beds: Those made of leather are coolest — Either beds or matrafes are cooler if large; because a person may move to the coolest part.



To be bro't under dress  
cooling the body by

+ Bring in 1 cool dress. 1 flowing garment -

(b) white hat w. <sup>the</sup> black or green lining & ~~band~~  
= perching in the hat. 2 sitting still - 3 sp<sup>t</sup> of  
wine to the cars. 4 a narrow entry. Bring in  
here the directions of the humane Society, & add  
to them Mr Miltonhouse's feet - recovered by from  
the languor & want of appetite occasioned by  
by excessive heat & fatigue by eating a raw  
Onion.



18

Bedchambers should always have a chimney, which, ~~in summer~~, promotes a circulation of fresh air. The chamber door may be left open; but that dangerous practice of opening windows <sup>at night</sup> is to be strictly guarded against; for they ~~into~~ <sup>admit</sup> noxious air which arises from fens, marshes, stagnant waters, streets &c. besides the weather may change while we sleep — hence the numerous train of intermitting fevers &c. in Philad. in autumn. Cellars should likewise always be provided with chimneys for reasons already given. To promote warmth in winter — thick walls, and a low ceiling are very useful; also tiling — carpets for the floors &c. <sup>upper back part of the</sup> The fire place should project from the wall; and ought to be small with iron backs and sides kept bright to reflect the heat — Closets are best at some distance from the fire; if near it, they should be kept open <sup>when we sit near them</sup> to prevent a supply of cool air coming from them. Raising the feet above the floor; sitting high, and be



\* It is remarkable that in climates like ours  
we suffer more from cold than they do in Canada  
or Russia going to the <sup>many</sup> conveniences & arts that  
are practised to guard against it.  
~~Then~~ 6 hours end for sleep - 2 years gained in  
this way.

+ With all the advantages of warmth obtained  
from <sup>the</sup> beds - covering - & the form of a room,  
it is sometimes difficult to Sleep. This is  
occasioned 1 by cold feet. To remove this,  
we should either jump out of bed, & stand  
a few minutes on a cold hearth - or 2.

Thrust our feet for a few minutes out of bed,  
or into a cold part of it. or 3. <sup>by</sup> have a bottle  
or jug of warm water well corked placed  
next to our feet in the bed during the night.  
+ Sleep is prevented by <sup>or an accumulation</sup> an obstruction of  
perspiration causing restlessness & tossing from

+ Side to side. This disease is called the Cruels.  
It is cured & Sleep Obtained, by 1 jumping  
out of bed. & walking once or twice about  
the room, or <sup>by</sup> by exposing the bed cloaths to



19  
before the fire; also to have <sup>19</sup> screens behind our  
chairs; are all serviceable to promote warmth.  
At the side of the fire is the coldest place, because  
of a constant supply of cool air coming along the  
walls to the fire - In France they keep a  
large quantity of ashes on their hearths, which  
retain the heat - <sup>+</sup> By night, a blanket un-  
der the sheet, and a bed for a covering are  
useful; curtains should not be too close, if used  
~~that are prejudicial, in causing us to breathe the same air~~  
at all. A fire in our bedchambers is liable  
to this inconvenience - that it falls away in  
the course of the night - when the air  
gets cool, and we are very apt to catch  
cold. + Bring in here page 25 ab<sup>r</sup> floors.  
Of fire places - stoves &c.

Fire places, as has been mentioned already, ought to  
be small; projecting from the wall, that they  
may the better diffuse their heat to the distant  
parts of the room.

Stoves are open, or close - The open stoves here  
are



fresh  
the Air which have been filled with our  
perspiration. 3 by two opopotion pills - as in Mr Armstrong  
= ted by Anxiety of mind, or a Succession of  
new Subjects of reflection. In this case, it is  
to be sought for 1<sup>st</sup> by confining the attention  
steadily for sometime to one Subject. or 2<sup>nd</sup> by  
Counting 100, or 200 backwards, or 3 by think-  
= ing upon the Virtues of a living or departed  
friend. -- go to Vol. 3 p 50.

~~I have~~  
- pies vegetables as potatoes & even  
+ ~~potatoes~~ - fruit - bread be baked in them  
meat - <sup>expediently</sup>  
to great advantage. - Tea kettles boiled on  
or in them by first <sup>putting</sup> ~~putting~~ the teakettle on  
a Spoonful or two of water <sup>in the water</sup> - but not heat  
and not terrible



are the Franklins, and <sup>20</sup> Rittenhouses; these are excellent for reflecting a much greater degree of heat, than could be obtained from ~~the~~ fire places whether lined with clay, bricks, or plates of iron—besides, that this superior degree of heat is obtained from a much less quantity of fuel.

Close stoves are of various sizes & constructions from 6 to 10 plates—The templated stoves have a sort of oven in their upper parts, in which cooking of <sup>various</sup> ~~every~~ kinds may be performed—There are more useful ~~xxx~~ than any of the others; for a greater heat is diffused by them, tho; at the same time,  $\frac{1}{5}$ , or  $\frac{1}{6}$ , of the fuel will suffice—

Thus it is that the industrious Germans in this country make ~~another~~ <sup>in the course of a life time</sup> saving, of at least £200 <sup>labor—</sup> ~~in the article of~~ fire wood—There is a peculiar advantage attending the use of close stoves: and that is,—a pipe, or funnel, may be carried across a room, into an adjoining one, or, through the ceiling into a bedchamber, or other apartment, above stairs, any of which it will warm sufficiently



+ It has been remarked by Strangers that they suffer more in our winters in Philad.<sup>a</sup> than they ever suffered in the winters of Canada, or even Russia. The reason is plain. In those cold Countries <sup>where the winters are long,</sup> provision is made by furs - & stoves against the cold. In our State, the extreme cold weather is of so short a duration that we neglect to guard ourselves against it by such conveniences.

- The present fashion of having large rooms & entertaining large companies will make stoves necessary in our Country.

- They cannot be heated without them so as to be safe or comfortable. The sooner therefore they are adopted the better. -- + p:27

The fuel used in this Country consists chiefly of wood. Hickory & Oak are chiefly employed for this purpose. The best fires are made of Hickory, ~~but~~ and it is said there is most Economy in burning it provided it is not too dry. To prevent this, it should



It has been objected, that these stoves afford a disagreeable and unwholesome heat - I am induced to think the contrary - they are certainly useful in diffusing warmth to every part of a room; and cannot prove injurious, where they are not over-heated, and, where there is a funnel to emit the heated air: the Germans, who use them throughout the winter, are observed to be a remarkably healthy people - <sup>+</sup> subject only of Secture, 9th  
smoking chimneys.  
to Dyspepsia from too much labor & a Vegetable diet.

Smoking chimneys are extremely disagreeable - smoke inflames the eyes - darkens the complexion, and hurts the temper - It stains the furniture, ceiling, and walls, of a house.

Smoke has some weight and will not ascend easily, unless carried up by rarefied air - hence on dull foggy days, in winter, when the air is condensed, we see smoke, instead of ascending, frequently rolling about in sluggish clouds.

hence



not be kept in a Celler, if purchased in the summer. Hickory fires are ~~adaptable~~ necessary for the purpose of cooking to advantage. Split hickory is apt to throw out sparks. To prevent this - take care that the log lies on the fire in such a manner as to throw its sparks upwards & downwards only - for the <sup>air</sup> ~~wind~~ which occasions them comes from between the bark and the wood. -

In making a wood fire - contiguity - convexity - & concavity are all three necessary. Where they cannot be otherwise obtained - small pieces of iron thrust in between each piece of wood has been found to be very useful. - An iron bar is useful in preventing the rolling of the wood on the ~~hand~~ <sup>hand</sup> - irons. -

The warmest & most agreeable fire is made of a mixture of wood, and large coals. This mixture is particularly useful



hence, also, rooms are <sup>24</sup> sometimes smoky before the fire is completely kindled; but, a large fire hurries it up, because of the rarified air its heat produces —

Smoke is occasioned —

1. ~~By the faultiness of the~~ <sup>the lightness of</sup> ~~new houses,~~ preventing the access of a sufficient current of air; this, in Europe is cured by a ventilator, or moveable pane of glass, in the room-door, which admits a sufficient supply of air.
2. When the funnel, or fire place, is too large, the air is not sufficiently rarefied to carry up the smoke — It should, therefore, be contracted to a proper size; the best method of discovering this size, is to take a piece of pasteboard the height and width of the fire place; by closing it with this, and cutting a small hole in the pasteboard trial, may be made whether it will then draw or not; if it draws the size is



in cooking. —

a Lin, or steel fender should be used to guard against the danger of the fire's falling or Sparks flying into the room after the fire is raked up at night. —

Fire in a room or of cloaths — how extinguished? By stifling it — fact at sea commd. by maj<sup>r</sup> Thorne. — ✓

Houses made cold by <sup>flom</sup> fires being ground, & connecting pieces cutting — hence parlours over cellars so cold. quires sh<sup>d</sup> be placed close, & lath ~~be~~ between each fire below — & over it plaster. —

✓ Shall now add a few directions to prevent either disagreeable or fatal effects of cold heat on the body at in all places. —

1 Of Cold — 1 ~~warm~~ <sup>or Cotton</sup> — woolen drefs — 2 ~~hot~~ <sup>mopassus</sup> — large shoes —  
2 exercise — 3 Keeping the feet warm —  
cork soles — canvas — & salt —  
Ind an practice — God Vandyke's B<sup>r</sup>.



is obtained; if not proceed to cut away more of the pasteboard untill you have gained your end; and then contract the fire place to that size — here, it is to be observed, that the width of chimneys is to be varied, in proportion to their heights — therefore, chimneys in upper rooms should be smaller than those in lower rooms — as they are lower

3. Shortness in the funnel often occasions smoke if the funnel cannot be easily lengthened, contract its width —

4. Two chimneys, where they communicate, are often smoky; there not being a sufficient current of air for both — In this case, one of them must be closed altogether.

5. Tops of houses, or a hill, rising above a chimney, <sup>may</sup> turn the smoke downwards by the wind blowing <sup>directly</sup> ~~down~~ upon it; as a cure for this, a turncap covering above and on three sides is used —

But



5 The fast of Abasco. —

1 Setting still - in a shade  
2 Heat - 2<sup>n</sup> Cool - flowing deep - 3 White  
hat - lining not in contact w<sup>th</sup> it - on  
handkerchief in it. & white cloaths -  
4 Sp<sup>2</sup> of wine to  
5 Exuding sweat - walking down a hill.  
the cars. & eating an onion - by  
Mr Ritterhouse - Of actual injury.  
warm pediluvium - fresh air - not  
too strong a current - 7 The system best  
fortified by the daily use of the cold bath.  
90 p 47 of Vol 3.

+ In a summer's day the heat in St Paul's  
Church London was 62° - in ~~the~~ a common  
house 70° - 75° in the shade & 80° in the  
sun. Inosely p: 43.



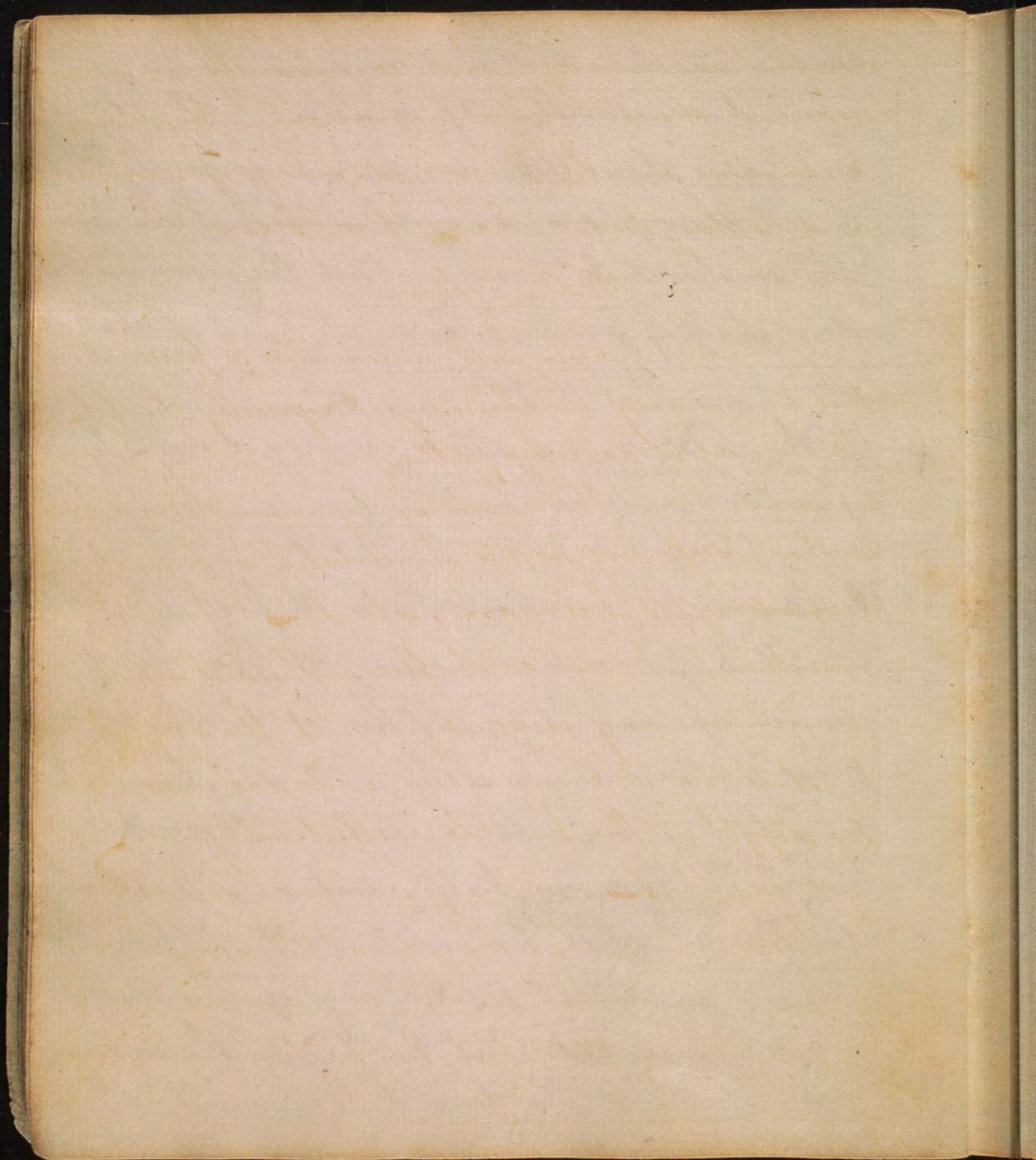
But a better method is to raise the chimneys where it can conveniently be done.

+ 6. A door placed too near a chimney gives too great a supply of unrarified air; which causes the smoke to be thrown about the room - The door should be moved; or, at least, the hinges turned next the fire.

+ 7. ~~Smoke~~ from a stack <sup>of chimneys</sup> coming down - here a slider must be used to close it entirely.

+ 78. It will be found, for the most part, that the smoking of chimneys is owing to their being carried up narrower near the top, than below; or zig-zag, all in angles - If a tapering chimney be very high, it is ten to one but it will smoke - The air in the room being rarefied, is forced into the funnel of the chimney, and receives from the fire an additional force to carry up the smoke. Now, it is evident that the higher the smoke rises, the less is the force that drives it, the slower







28

slower it must move, and consequently the more room it should have to move in. — therefore, a chimney should be carried up perpendicularly and rather wider above than below.

### Of Fire in chimneys.

Every prudent person, will endeavour to prevent this, by having his chimneys frequently swept. This might be done by pulling a bundle of straw up and down the chimney, by means of a rope, without suffering boys to undertake a business so degrading to human nature. — If a chimney, nevertheless, should catch fire, The best method of extinguishing it is to prevent the access of air by shutting the windows and doors close, and by stopping the fire place, effectually, with a wet blanket. — Or, half a bushel of salt may be thrown into it; by melting, the alkali will separate from the acid, and glaze, vitrify and calcine the inside of the chimney as it does stone ware &c. — Or, by concussion, as, by firing a gun into it. —



+ The Sweeping of Chimneys is rendered unnecessary & all changes from their catching a fire, by glazing their inside by means of Salt ~~not~~ thrown into a large fire as soon as it is built. It becomes so glazy in consequence of this, that no soot will adhere to it. — It has been tried I have heard with success in New Jersey.

---

+ provided it is ~~per~~ thoroughly dry, otherwise we accelerate its decaying by confining its moisture. —



24

In order to guard against fire, in houses, at night,  
it is necessary to shut the doors, windows, &c. close,  
~~in order~~ to prevent the access of air, which is  
the great supporter of flame — Mr. Fisher's  
fact. — +

Vaults and Cellars have always an equal  
temperature of air — hence a cellar is the best  
place to preserve wines &c. in summer, and vegeta-  
bles in winter. Cellars with chimnies keep vic-  
tuals from moulding, by promoting a circu-  
lation of air. Danger from aerial acid. How preven-  
-ted! A tower. Bath  
Preservation of the wood &c. of a house

Wood is preserved, by letting it <sup>perfectly</sup> dry before building.  
else its moisture ferments <sup>in</sup> and rots, it — painting  
is useful to prevent its absorbing moisture. it  
will last five times as long, when painted as  
it would otherwise <sup>+</sup> Posts which are to be  
placed in the ground, or beams in building, are  
better to have their ends burnt, or covered with  
resin, before they are used.



+ Great care should be taken not to sit,  
or sleep in room that has been washed,  
till it is perfectly dry. <sup>Calamities</sup> ~~Cold~~ and fevers  
have often been produced from neglecting  
this precaution. — also not to sleep in a  
room recently plastered - Van Swieten tells of  
a palsy from it, & Dr B Morris got a Consump<sup>n</sup>.  
from it.



30

Walls are preserved by plaistering, and weather  
boarding, which keep the walls dry, by preventing  
the access of moisture. Roofs preserved by painting,  
when wood. But tiles best. ~~and~~  
Of rendering a house clean & wholesome.

This is a most essential part of good housewifery  
and cannot be too much attended to. Washing  
frequently in a warm season is very conducive  
to ~~both~~ cleanliness, and, consequently, to health. —  
(So generally is this practice approved of, that, in  
this city, one day in every week is set apart  
for it). Plaistering, and whitewashing, are extreme-  
ly necessary. — The celebrated Mr. Howard, who  
has visited a greater part of all the prisons in  
Europe, with a view to <sup>point out the means of lessening</sup> comfort, and ~~relieve the~~  
<sup>human misery</sup> ~~sufferings of the unfortunate~~, remarks that  
in those prisons where whitewashings were per-  
formed two or three times a year, diseases were  
rarely found. — Opening windows in the day  
time discharges impure air. Ventilators are  
very



# Dr Rogers relates a fact of ~~peas~~ cabbage  
having once produced a fever at Oxford  
from putrefying near ~~the~~ one of the Colleges.

x Providence having made these animals which  
inhabit <sup>& men</sup> Stables necessary to each other, he has  
kindly prevented any inconvenience <sup>or disease</sup> from  
their being so near each other. -

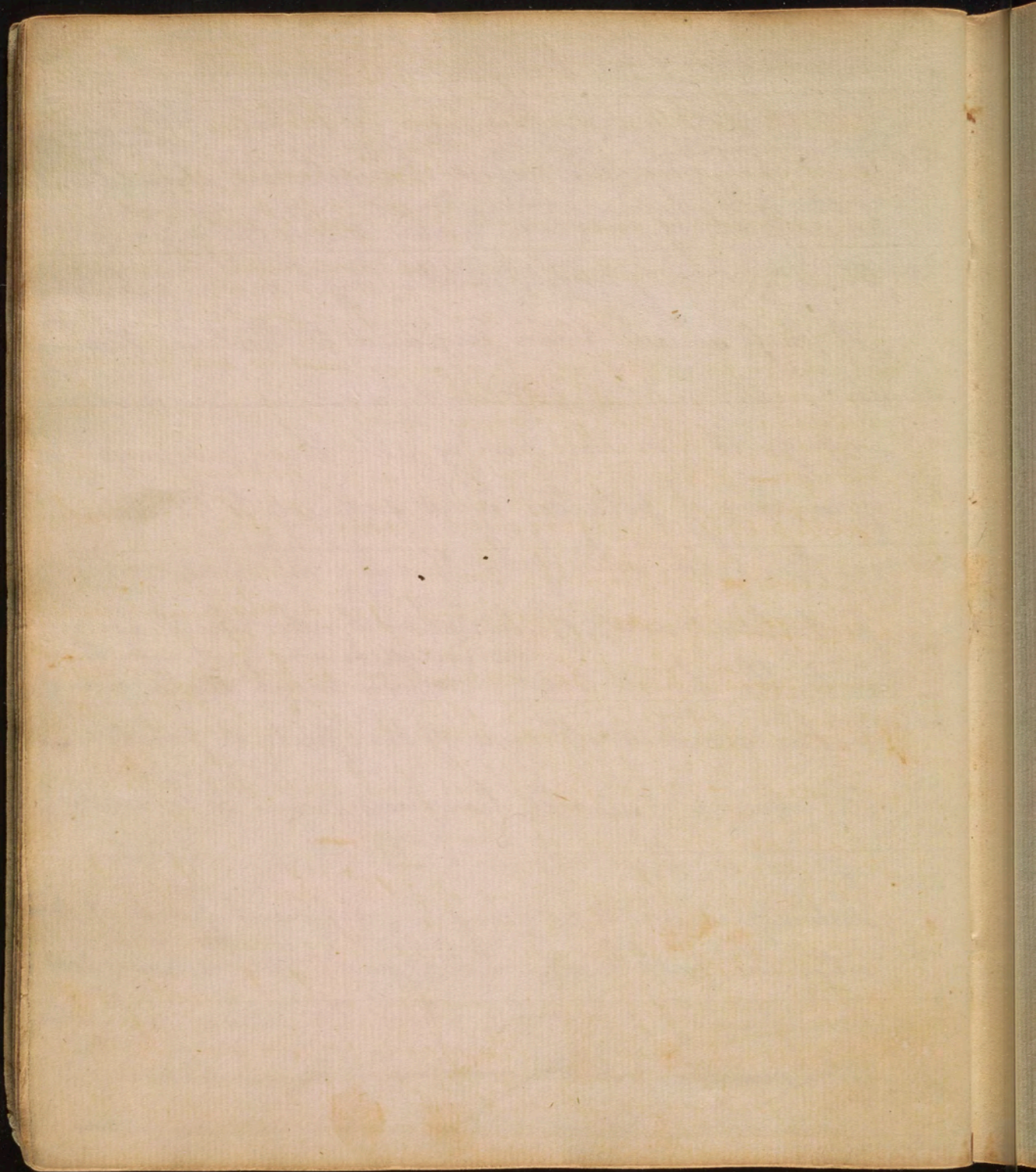


very necessary, for this purpose, especially, where many people are assembled together. — Offal matters, especially, the refuse of vegetables, should not be suffered to remain near a dwelling house; there, when putrid, emit very noxious exhalations.

A Ship sailed from England to Portola; thence she returned to England; and made a second voyage to Portola; during all these voyages a quantity of potatoes were suffered to remain in her hold, which by this time were completely putrified; and, of ten sailors, who went down into the hold, <sup>contracted fevers of which</sup> nine ~~most~~ <sup>all</sup> died; ~~owing to the noxious effluvia of the putrid potatoes.~~

The effluvia of stables, however, seems to be an exception to these remarks. — When contagious distempers were raging in different parts of this city, the people who lived near stables have been exempted from sharing in the general calamity. <sup>+</sup> The ~~breaths of these animals, also, is wholesome;~~ whereas, that of human beings is exceedingly impure.







32  
To prevent, or destroy insects &c.

Insects doubtless were designed by Providence to answer some useful purposes. I certain it is that they are standing monuments of the fall of man: they tell us that we have forfeited our right to the earth; and that, while we are in this world, we are in an enemy's country. They serve also to exercise our humanity, and patience, and to promote clean living. — Whenever they injure us, however, we are justifiable in destroying them, by the principles of ~~man~~ self-preservation.

Mosquitoes are produced from stagnant waters, rain water kept for washing, in vessels, in our yards, is very apt to produce them — the vessel should be covered — or a few fishes put into the vessel will feed on them and their eggs. —

Flies are the offspring of filth — hence they abound most in dirty houses, where they are very useful, by consuming impure matter, which might cause diseases — They are also food for singing birds — They feed on fruit, and are found in swarms  
where



+ They may be drove out of a bed room  
by a napkin - or kept out of it by  
keeping the room  
~~dark~~ drawing the day.

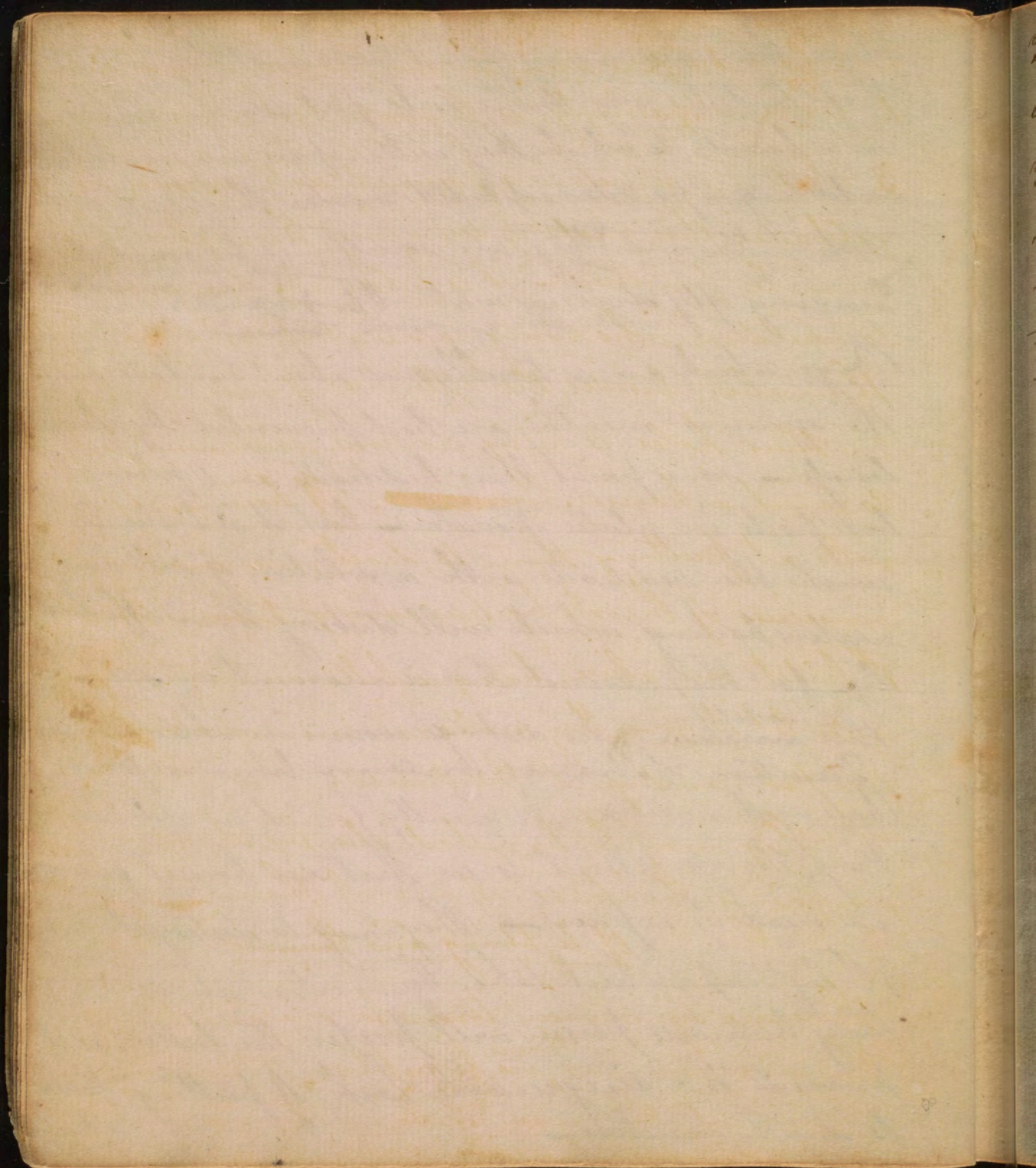


33.  
where there are many fruit trees — The best method of destroying them, is to put some molasses on a board, to which they will repair in swarms; a little gunpowder exploded under the board will destroy them — They are sometimes poisoned, by mixing fly stone in water & 6. +

Bugs, which are so troublesome about our beds, in the summer months, are best prevented by cleanliness — some paint their bedsteads, and place the bed posts in pails of water — but, it is better to wash the bedsteads with a solution of salt and water, boiling, which will destroy them effectually — for they cannot live a moment in salt — this solution also destroys worms in children —

Decoction of Stramonium likewise powerful.  
Rats and mice are, frequently, found in old houses; they, therefore, hint to us that our houses stand in need of repair — They may be destroyed — 1<sup>st</sup> by traps, which take them either alive, or dead; every humane person will prefer the latter, as it prevents the disagreeable task of putting them to death ourselves —







2. Cats destroy <sup>rats & mice;</sup> ~~vermin~~; <sup>224</sup> for this purpose they should be fed very sparingly, as they hunt best when hungry.

3. Rats are sometimes poisoned with arsenic, or ratbane; this mode of destroying them should never be practised - it is extremely dangerous to children, who may come at it, and poison themselves; besides, the effluvia of rats, that die in their holes is very noxious, and never fails to taint a house. —

If humanity revolts at putting them to death, we may rid ourselves of them, by banishing them. Thus -

1<sup>st</sup> Catch one alive, hang a bell round its neck, and let it go - they will all immediately be terrified, and quit the house. or

2<sup>d</sup> They may be banished, also, by shaving or singeing the hair off one of them -  
of lightning and thunder.

These are synonymous terms for one and the same thing - when near, <sup>there is</sup> no perception of time between them; and the reason of seeing the flash at other <sup>times</sup>



+ "And harmless all your thunder views,  
" ~~and~~ By sticking to his point.

\* The King of Britain placed conductors <sup>th</sup> on his Stables in London during the late war, but upon hearing that a house had been struck by lightning with these newly invented balls, he instantly took them down, & replaced them with sharp pointed conductors. Upon which the following lines appeared in a London newspaper.

" While you Great George for trifles hunt,  
" And sharp Conductors change for blunt,  
" The Nation's out of joint;  
" Franklin, the wiser plan pursues, +



times before we hear the noise of the explosion, is that the motion of light is almost instantaneous; whereas, sound moves only at the rate of 1142 <sup>feet</sup> in one second of time (according to Sir Isaac Newton) - Thunder is occasioned by two clouds, called plus and minus - or the greater and the less; the former greater ~~in~~ <sup>in</sup> electricity than the latter. When these clouds come near to each other, the lesser, by the principles of an equilibrium, attracts the electric fire of the other; which occasions an explosion, of the large one, at each discharge of matter - When no small cloud is near, a mountain, a tree, or house &c. will attract this matter - In order to guard our houses against the bad effects of lightning; we should use Doctor Franklin's conductors; <sup>to carry it silently off to the earth:</sup> these are iron rods with one end in the ground and the other reaching a little higher than the <sup>top of the</sup> chimney; the point is to be sharp and tipped with brass to prevent its rusting - in England balls have been placed on the top; but they did not answer the purpose \* Lightning is conducted by metals of every sort; but not by glass - Where



Where there is no rod, <sup>36</sup> avoid sitting near a chimney,  
door, or window, for these also conduct lightning—  
the safest place, is near the middle of the room,  
on a feather bed—  
Trees, also, and every other object that may attract  
lightning are to <sup>be</sup> avoided in a thunder storm. The  
brutes in a storm of this kind shun trees &c. as if by  
instinct.



ney,  
- or  
m  
A  
The  
by



## The Twelve Signs.

- ♈ Aries, or the Ram.
- ♉ Taurus, the Bull.
- ♊ Gemini, the Twins.
- ♋ Cancer, the Crab.
- ♌ Leo, the Lion.
- ♍ Virgo, the Virgin.
- ♎ Libra, the Balance.
- ♏ Scorpio, the Scorpion.
- ♐ Sagittarius, the Archer.
- ♑ Capricornus, the Goat.
- ♒ Aquarius, the Waterbearer.
- ♓ Pisces, the Fishes.

## Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	-	9	12	15	18	21	24	27	30	33	36
4	-	-	16	20	24	28	32	36	40	44	48
5	-	-	-	25	30	35	40	45	50	55	60
6	-	-	-	-	36	42	48	54	60	66	72
7	-	-	-	-	-	49	56	63	70	77	84
8	-	-	-	-	-	-	64	72	80	88	96
9	-	-	-	-	-	-	-	81	90	99	108
10	-	-	-	-	-	-	-	-	100	110	120
11	-	-	-	-	-	-	-	-	-	121	132
12	-	-	-	-	-	-	-	-	-	-	144

## Money.

£. s. d. q.

1-20-12-4

Avoirdupois Weights.

T. C. Q. lb. oz. dr.

1-20-4-16-16

Troy Weight.

lb. oz. dwt. gr.

1-12-20-24

Apothecaries Weight.

lb. oz. dr. scr. gr.

1-12-8-3-20

Wine Measure.

T. P. H. G. Q. P. G.

1-2-2-6-4-2-4

Long Measure.

D. M. F. P. T. F. I. B.

1-60-8-40-5-3-12-3

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. T.

1-4-40-5

Dry Measure.

B. F. G. P. Q. P.

1-4-2-2-2-2

Cloth Measure.

T. Q. N. In.

1-4-4-1

Time.

T. D. H. M. S.

1-365-24-60-60

Thirty days hath September,  
April, June, and November;  
February hath twenty-eight\* alone,  
All the rest have thirty-one.

\* Twenty-nine, every 4th or leap year.

## Numeration.

Millions.	Thousands.	Hundreds.	Tens.	Units.
C X	C X	C X	C X	C X
9 8 7 6 5 4 3 2 1	3 0 5 2 1 4 6 8 0	2 0 4 6 8 0 9 5	4 0 2 5 3 0 0	8 2 0 7 5 3
				6 0 0 9 8
				5 0 0 1
				7 0 0
				9 1
				4

## Pence Table.

d.	d.
20	1 8
30	2 6
40	3 4
50	4 2
60	5 0
70	5 10
80	6 8
90	7 6
100	8 4
110	9 2
120	10 0

## Numerical Letters.

1 5 10 50 100 500 1000  
I V X L C D M.  
MDCCLXXXVII.

BOOK.

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.



3 FOR THE No 3  
YOUNG LADIES' ACADEMY,

212  
7395  
F 14

Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—PROV. iv. 1, 7, 8, 9.  
If sinners entice thee, consent thou not.—PROV. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE's Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Mrs. More's Essays.*

If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time.

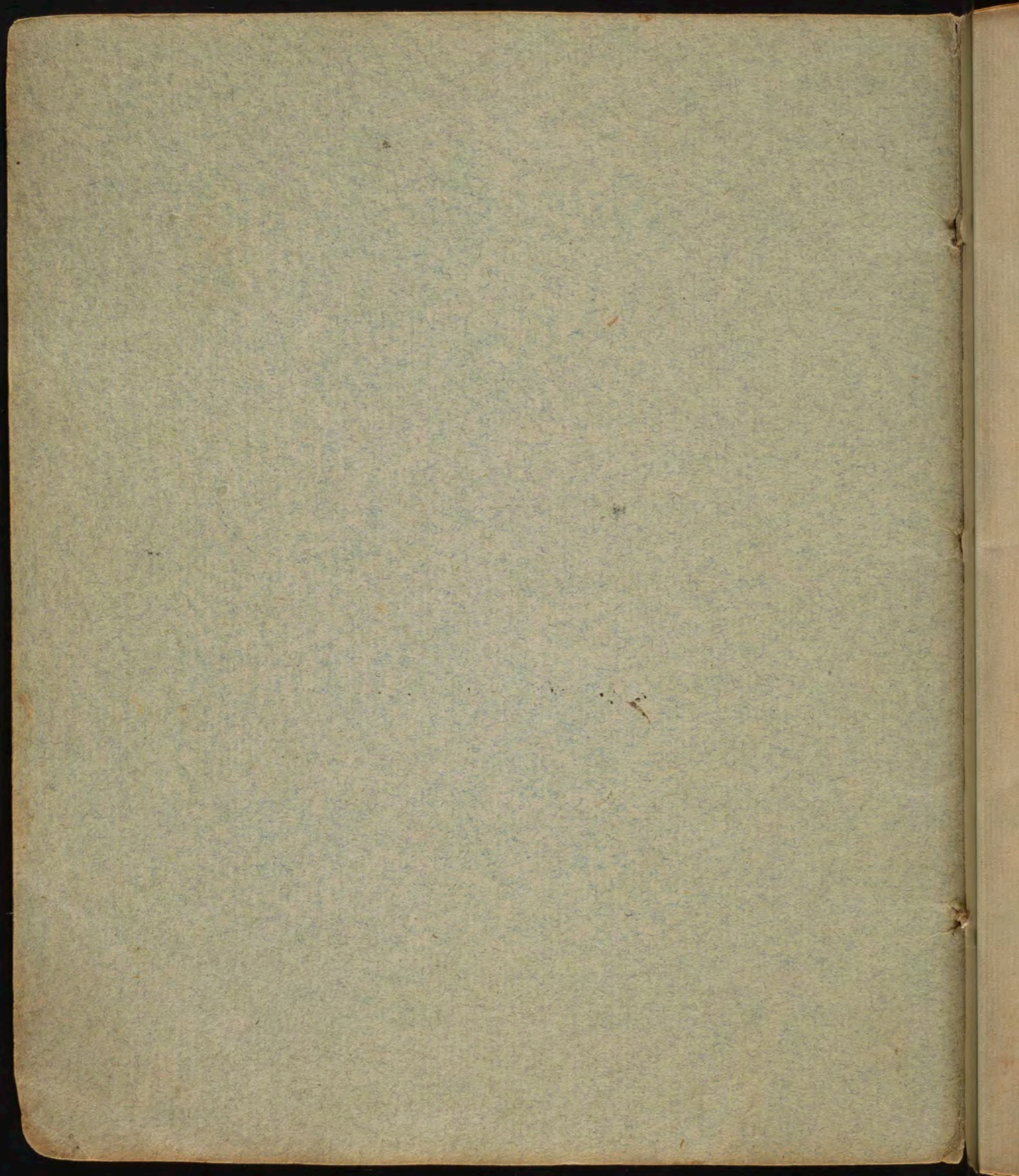
Pleasant, indeed, are all the paths which lead to polite and elegant literature. Yours, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value.—Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

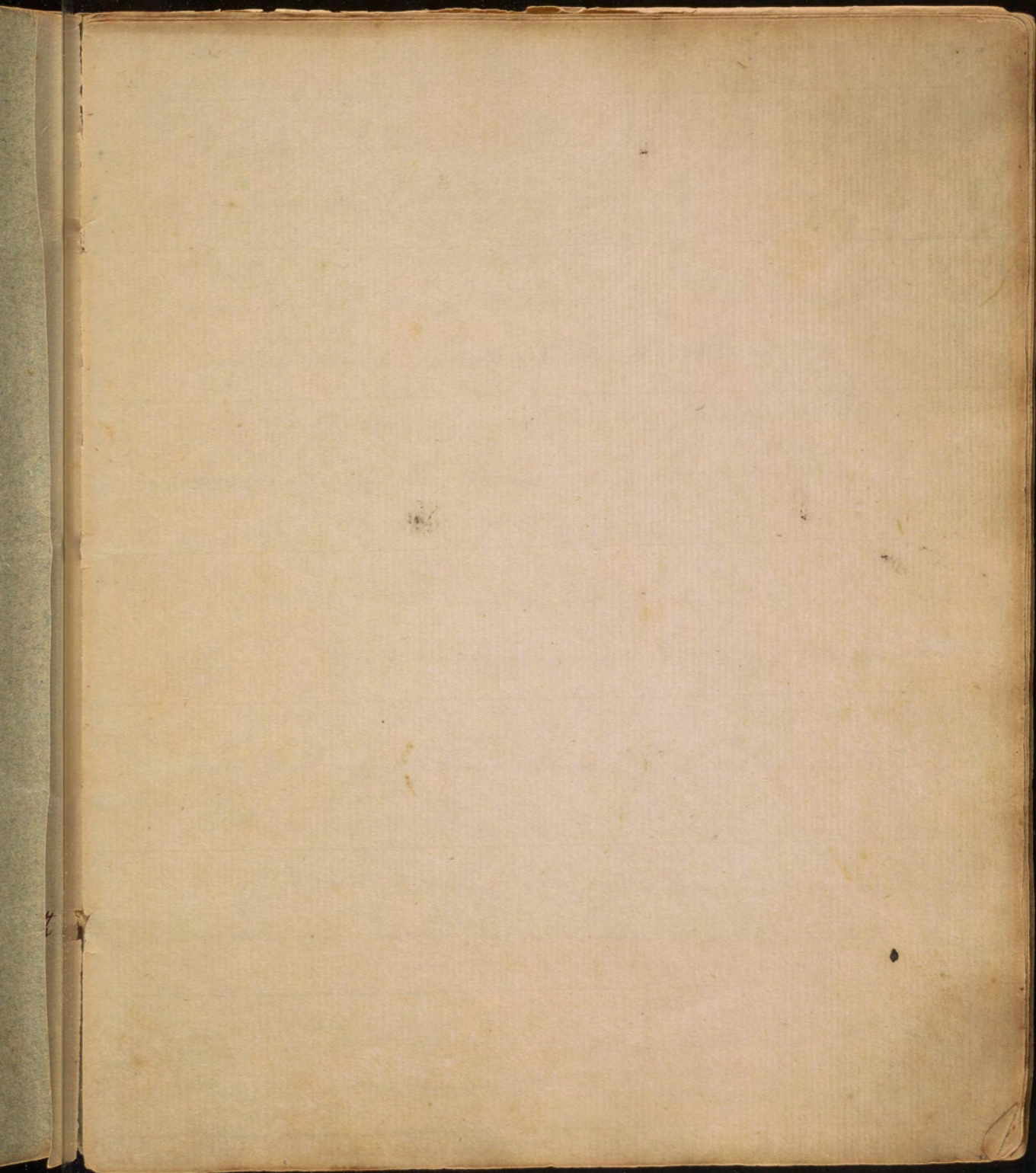
That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are, perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*Knox.*



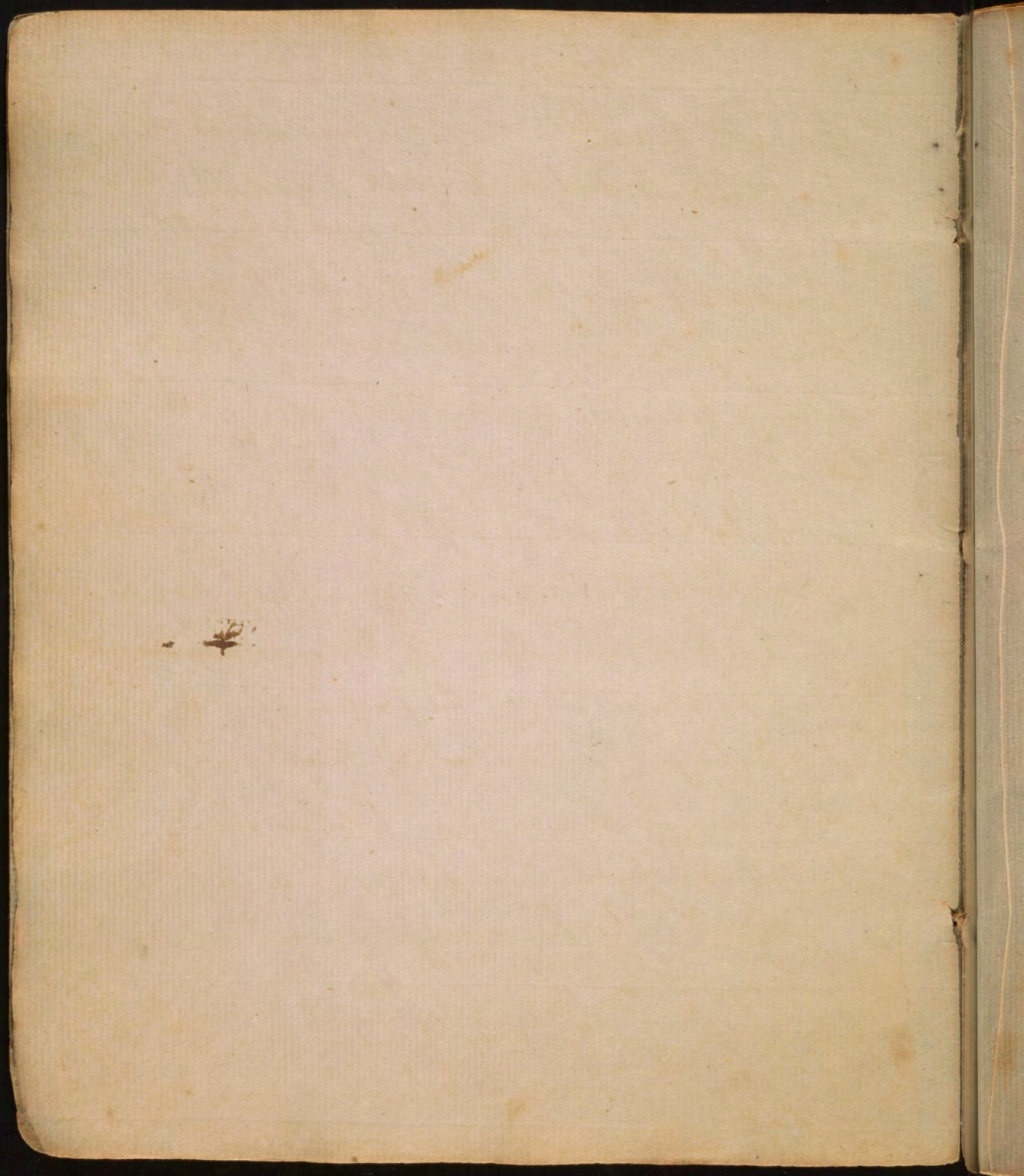












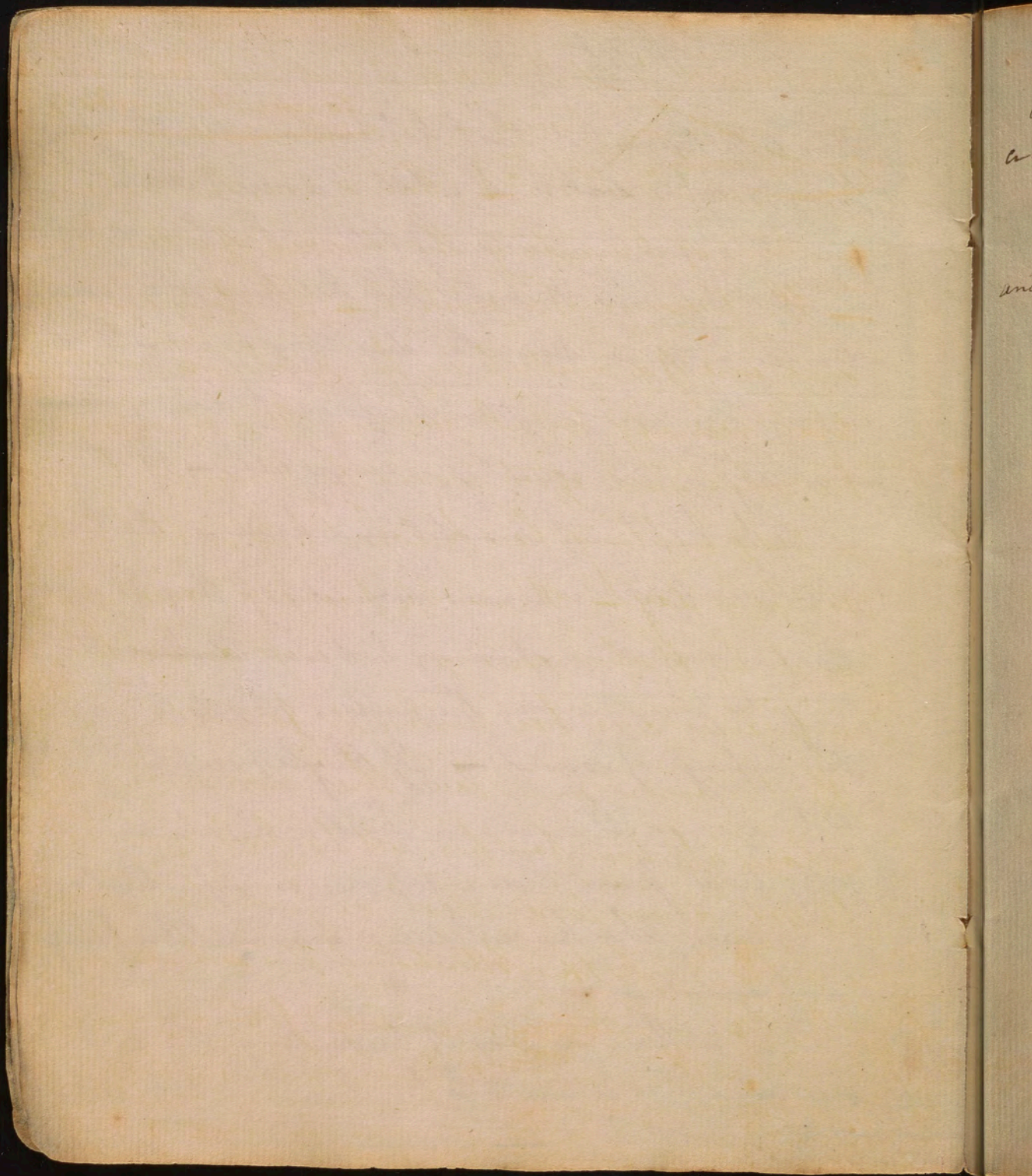


It is to be lamented that kitchens are too often the receptacles of ~~dirt~~; and, what is worse, of vice. To prevent a communication of both, it has been recommended by some to have the kitchen at a considerable distance from the dwelling house. This, in large families, and in the present state of ~~civiliz-~~ ~~ed~~ society, in this country, is impossible. If they are to be kept out of sight and hearing, the best place, in towns, is under ground: if they be under the parlour, some springy body, as ~~rubber~~ or straw, may be placed under the parlour floor, to prevent the passage of sound. If they be receptacles of dirt, vice, or ill manners, children should be carefully kept from them; for, vice, in a particular manner, like knowledge is increased by being propagated.

But is there no way of preventing this dirt, or vice? Are our servants to be abandoned to destruction and ruin? — No —

Our







[Our servants, to use the words of Lord Chesterfield, are  
 "our unfortunate friends" — Or, ~~in the words of a~~ <sup>to use the words of</sup>  
~~a higher authority~~ <sup>our brethren</sup> —] There is one, and but one,

method of preventing the disorders of a kitchen.  
 and that is by the presence of a mistress. — The tongue, eyes,

and ears of a mistress in her kitchen <sup>are</sup> an effective  
 remedy for all disorders; It is inconceivable  
 what good effects would be produced by  
 a lady visiting her kitchen two or three  
 times a day — It would promote economy,  
 and by that means give a wife a complete  
 influence over her husband; for certain it is,  
 that a man will love that woman most,  
 whose affection for himself he feels, every time  
 he sits down to a meal, or puts his hand  
 in his pocket.\* Attention of this sort will defend  
 liberal and extensive knowledge from censure; for  
 among the various illiberal reasons which have

\* See Solomon's character of a virtuous woman — Prov. XXXI. 10.



The principal design of Drap is to defend  
us from the inclemencies of the weather.  
particularly heat & cold. — I shall  
~~+ cool in summer & warm in winter~~  
~~is~~ <sup>2</sup> briefly mention the means  
of Obviating 1<sup>st</sup> Cold — & 2<sup>nd</sup> Heat vol. 2  
p25-



39  
have hitherto been given for neglecting the education of ladies, one has been — That a liberal education renders ladies inattentive to domestic duties — How praise worthy then would it be in such ladies to shew, by their conduct, that this remark is not only illiberal, but, also ill-founded — A kitchen should have an oven; it should also have a floor of brick, or stone, to prevent danger from fire — a pump, or well, a milk-house, and a wash house, should likewise be near it — Ice-houses, in which ice &c. may be preserved in the heat of summer, must be deep in the earth, and defended, from the heat, by hay, straw, or some other spongy body.

### Of Dress. +

Woollen clothes are liable to be cut by moths in summer — to prevent this — mix some tobacco leaves, cedar shavings, alspice, or camphor, with them — Or, what is a better method



+ Shoes & boots to be dry & warm -  
Capt Miles's receipt -



40

pack them in trunks, or chests, and place them in the cellar, the dampness of which will preserve them, or they may be kept safe by wrapping them in linen - Woollen and cotton clothes are most healthy.

it were to be wished that the people of this country, would be more careful in changing their light summer dress, for garments of woollen, ~~or~~ ~~cotton~~, at the first change of the weather, in the fall of the year; a numerous train of diseases might be prevented by such precaution.

Linen clothes are not so healthy; being liable, <sup>when old, or dirty to produce diseases</sup> to become putrid, with the exhalations from the skin - +

Silk clothes are very durable: when they become old they may be carded and spun over again: hence, there is great economy in using them.

#### Stains, in clothes

Grease may be taken out of them with chalk and water and a hot iron; this, however, will spoil dark colours - therefore, it is better to use an



The stain of ink may be taken out  
+ ~~ink~~ by new milk — [Mrs Archer] &  
by dipping the stained part in a pure  
melted tallow candle, & then throwing it  
into the washing tub. It will come  
out clean. go to Sleep p 19. 2



15  
aromatic oil, as spirits of turpentine; by rubbing  
the stain with this, the grease will be rendered  
volatile and will evaporate with the turpentine.

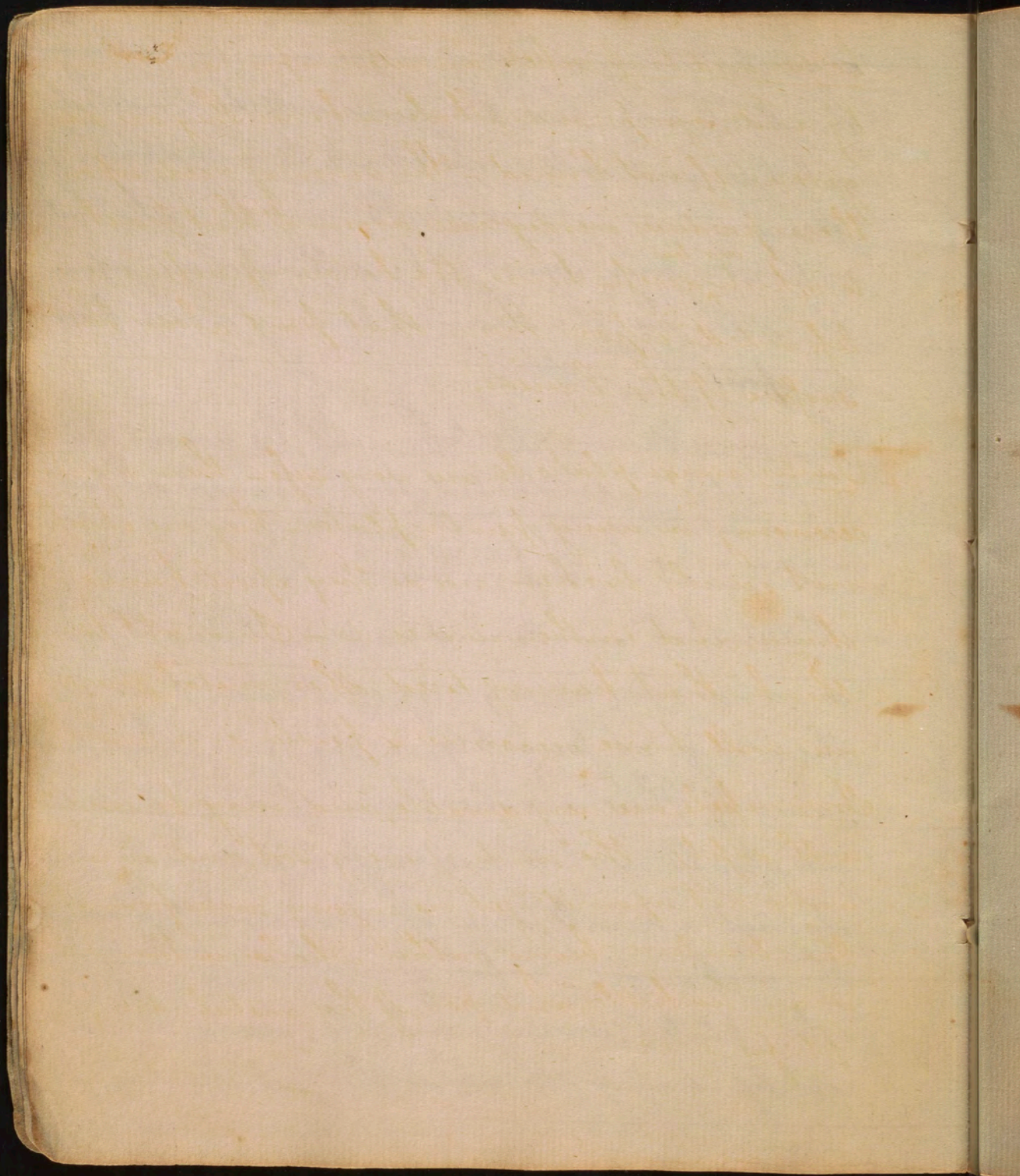
Stains of red wine, cherries, &c. may be washed out  
with Madeira wine; or, by salt, dissolved upon  
the stain, by the steam of boiling water, from  
the spout of a <sup>tea</sup> kettle.

Iron moulds may be taken out by means of a  
muriatic acid obtained from common salt. The  
acid must be <sup>well</sup> diluted with water, or it will corrode  
the linen. + Of furniture.

Plate vessels are the best and most durable; no  
common acids having any effect upon them:  
there is great frugality in the use of them, be-  
cause of their duration; and, if, at any time,  
we should wish to have vessels differently fa-  
shioned, a small sum of money will procure  
the exchange. Vessels of iron, tin, or copper,  
when plated, answer very well; besides, we can  
easily change them as the fashion changes.

Copied





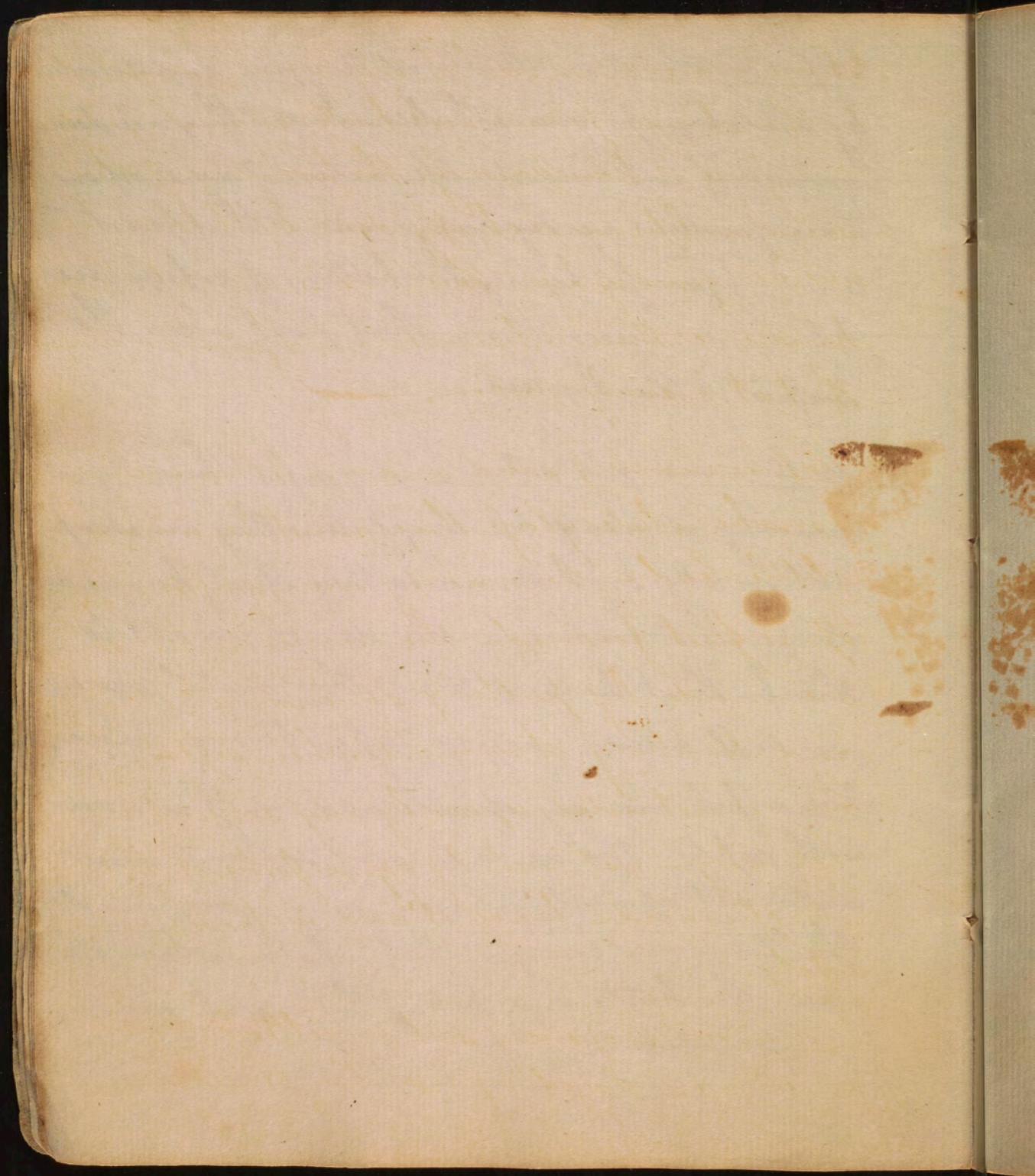


Copper and brass vessels <sup>are</sup> acted upon and corroded by acids, syrups, and alkalis - hence they are dangerous, if not tinned - The action of acids upon these produces verdigrease, around that part to which <sup>air has</sup> access - hence, the bottom of vessels are less acted upon than that part above the surface of the liquids. contains

+ Pewter mugs plates &c. are very safe - there is great economy in using pewter plates - they are cheap, not easily broken, nor do they spoil knives, as china, and earthen wares do - I am apt to think that having tried other metals, wares, &c. we will have recourse to pewter once more!

Iron vessels are very durable, and may be used with safety - tho acids, of every sort, and even water act upon it; yet, no injury arises from it; the tincture being rather wholesome than otherwise. Tea kettles, and pots, of this metal are very fit for use.







43

China ware is made of a <sup>fine white clay</sup> stony earth and called by the Chinese petunse, and kaoli; enamel of melted tin gives it transparency: the painting of this ware in China is chiefly done by children under twelve years of age. This ware is very safe and handsome; there is, however, one objection to it, that it is easily broken. —

Glass is made of sand and an alkaline salt; to make white glass these must be mixed with a little lead. In making wine glasses the top is first formed — the curves in the shank are made by putting an enamel on it and twisting it around when soft. This ware is not acted upon by any solvent in chemistry — not even by aqua fortis, or the vitriolic acid — hence it is used with the utmost safety.

Earthen ware of every sort as delft, stone, queen's-ware &c. are glazed by a solution of calx of lead in water, which vitrifies the clay. Vessels glazed in



+ Earthen ware - China & glass mended by  
Adam & Eve powder - being boiled in milk will  
be tied together - & by a paste made of the white of an  
egg & unslacked lime - also a gluten  
obtained from wheat by a process  
described by Fourcroy.



44  
in this manner are dangerous and not fit for use.  
for acids dissolve lead and the solution, tho' sweet,  
is poisonous. In Devonshire, in England, where  
they make and drink much cyder. the people  
were for some time afflicted with a violent griping  
disorder in their bowels, called the Devonshire chol-  
ic; this they at length found was occasioned  
by drinking the cyder which had ran thro'  
leaden pipes — +

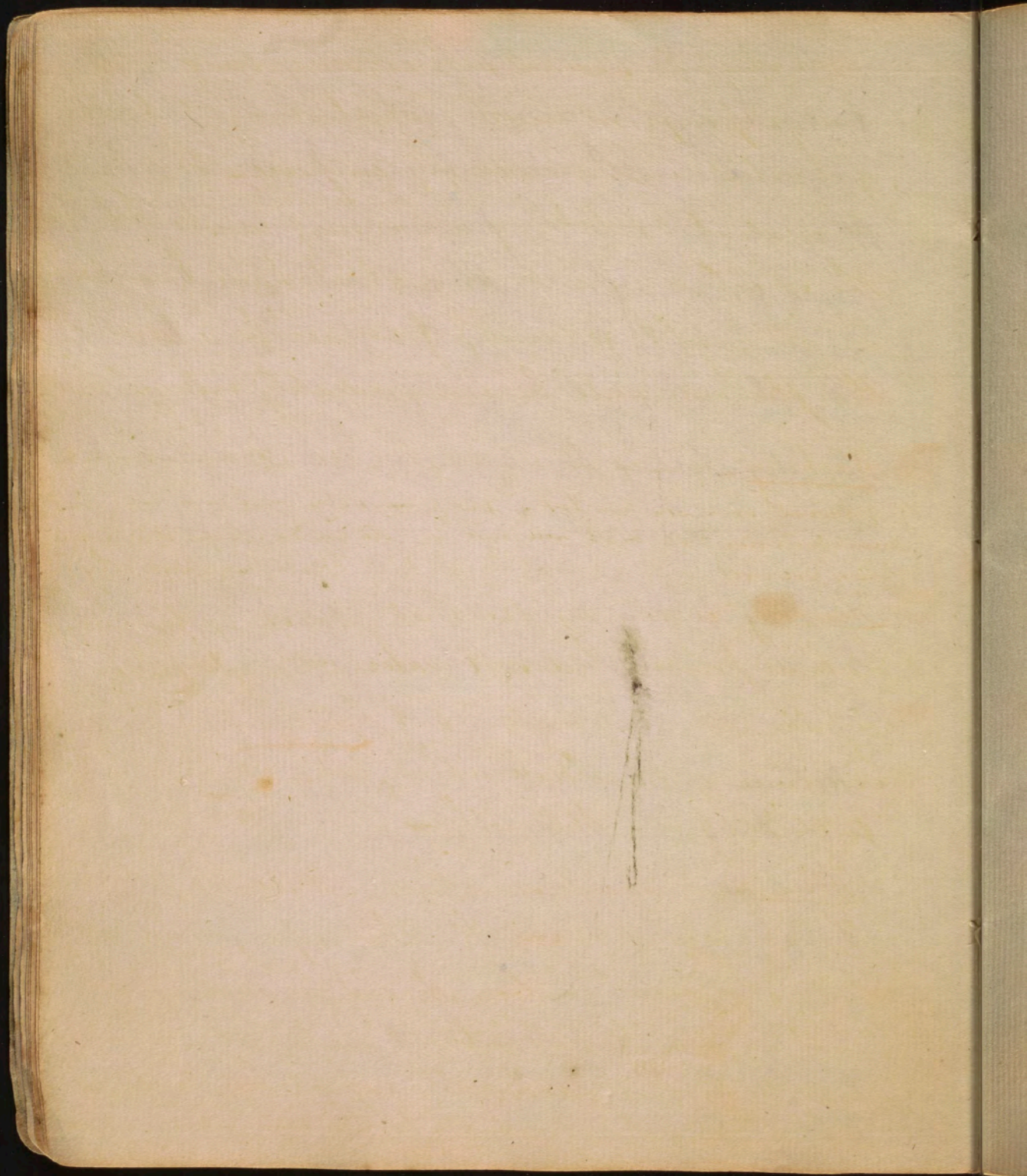
Looking glasses are rendered capable of reflecting  
the rays of light, by covering over one side of  
them with an amalgam of tin foil and mercury.

Pictures are painted upon canvass, wood, glass, or  
metals — with crayons; or in oil colours; or <sup>in</sup> water  
colours —

Prints —

Busts are made of plaster of Paris, ground, diffused  
in water, and cast; either at full length, called alto  
relievo; or, in part called baso relievos







45

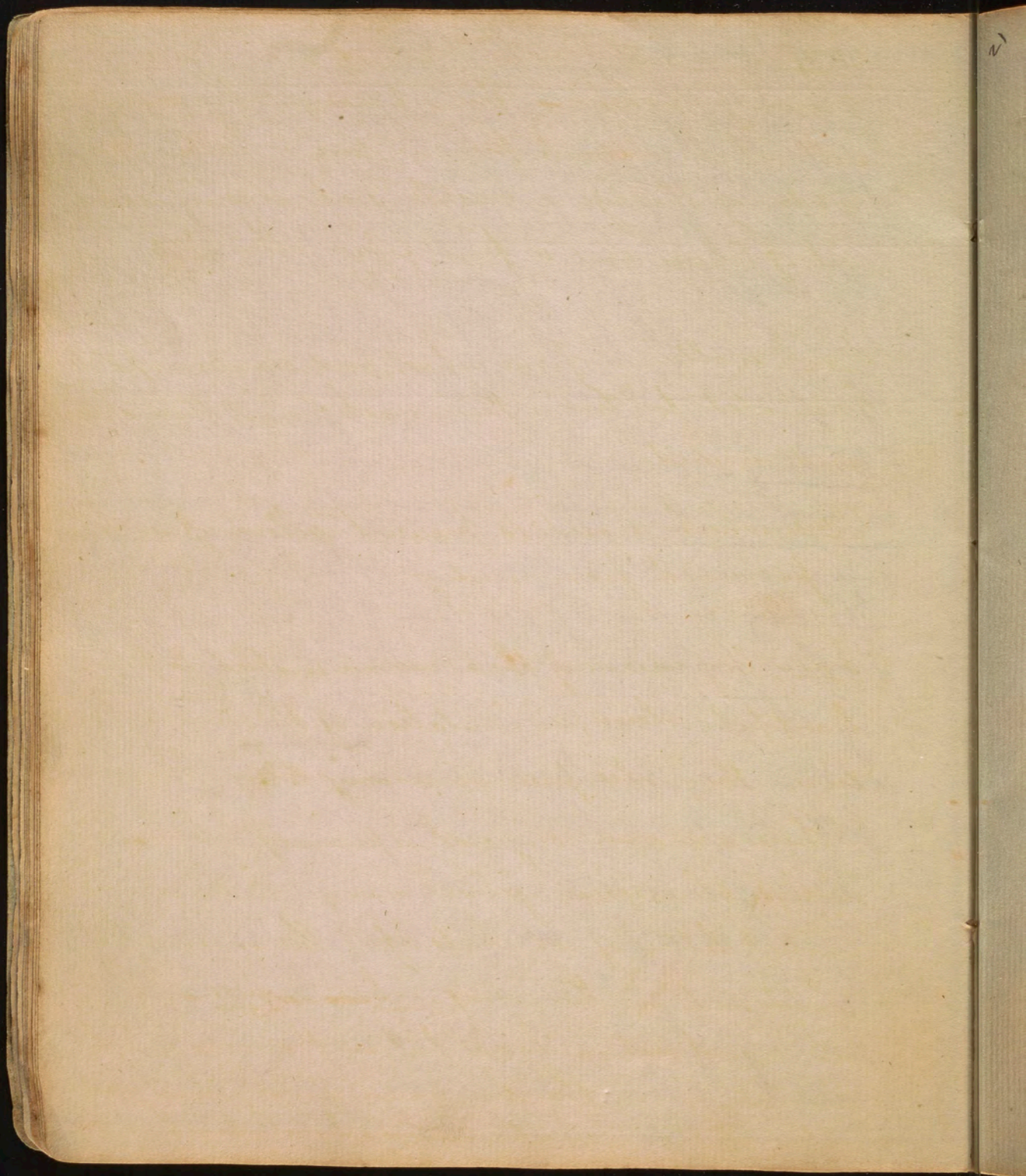
Beds sheets &c. should be well aired daily to discharge perspired matter which is much phlogisticated and exceedingly impure. This will be evident by taking a burning candle between the sheets, any morning, which have been lain in all night; for unless fresh air be admitted the flame will be immediately extinguished.

Washing should be performed with soft water such as rain or river water. It is generally used warm - but some articles are best washed in cold water. Soaps of various kinds are used in this operation of which I shall speak presently.

Bleaching is done by the heat of the sun, a fixed alkali (as potash) and soft water. It might be done by the sun and water; but better with the assistance of the alkali which <sup>dissolves and</sup> takes off ~~the~~ the vegetable filth &c. from the cloth -

Ironing is done to smooth, or, as it were to polish, the surface of linen &c. This is performed with hot irons: great caution should be observed in putting the hands into cold water, when they are heated by this exercise: there have been instances of some dying in a few hours by this inconsiderate act -







21  
Soap is made of oil, or <sup>fat</sup>, and an alkali obtained from ashes - This is hardened by common salt which abstracts the moisture, or rather the water of the lye - Castile soap is composed of oil of Olives and a fine fossil alkali.

Starch is obtained from wheat, and sometimes potatoes, fermented for two or three weeks; and then strained, and washed.

Blue, which is used to prevent yellowness in cloths, is procured from indigo.

Dyes. By means of these we are enabled to procure beautiful colours, in imitation of the works of nature; they, also, preserve many things, like paint.

There are seven original, or primary, colours - violet, indigo, blue, green, yellow, orange, and red. The initial letters of which, to assist the memory, are contained in the words - vib. ind. og. y. or. - These colours exist not in bodies; but, in the rays of light derived from the sun; and the different bodies appear of their respective colours by reflecting these rays.







47.  
The colours of bodies arise from their dispositions to reflect one sort of rays, and to absorb others.

Such bodies as reflect two or more sorts of rays appear of various colours. Hence, the whiteness of bodies arises from their disposition to reflect all the rays of light promiscuously—And, the blackness of bodies proceeds from their incapacity to reflect any of the rays of light—From hence it arises that black bodies, when exposed to the sun, become sooner heated than all others.

Cloathing is made of Wool. Cotton <sup>fur</sup> linnen & Silk. Wool excellent in variable & moist climates - next to the skin. Cotton not liable to be worm eaten, & suits all its seasons. Linnen less wholesome than wool or cotton. Silk wholesome & durable. May be dissolved in a caustic alkali. In this way gold & silver may be obtained from lace. -

Woolen Cloathes should be laid aside ~~in~~ <sup>in</sup> our climates <sup>the 1<sup>st</sup></sup> of June, & put on again on the 1<sup>st</sup> of Septem<sup>r</sup>. - They should



+ Bring in Lewis' recipe.



48

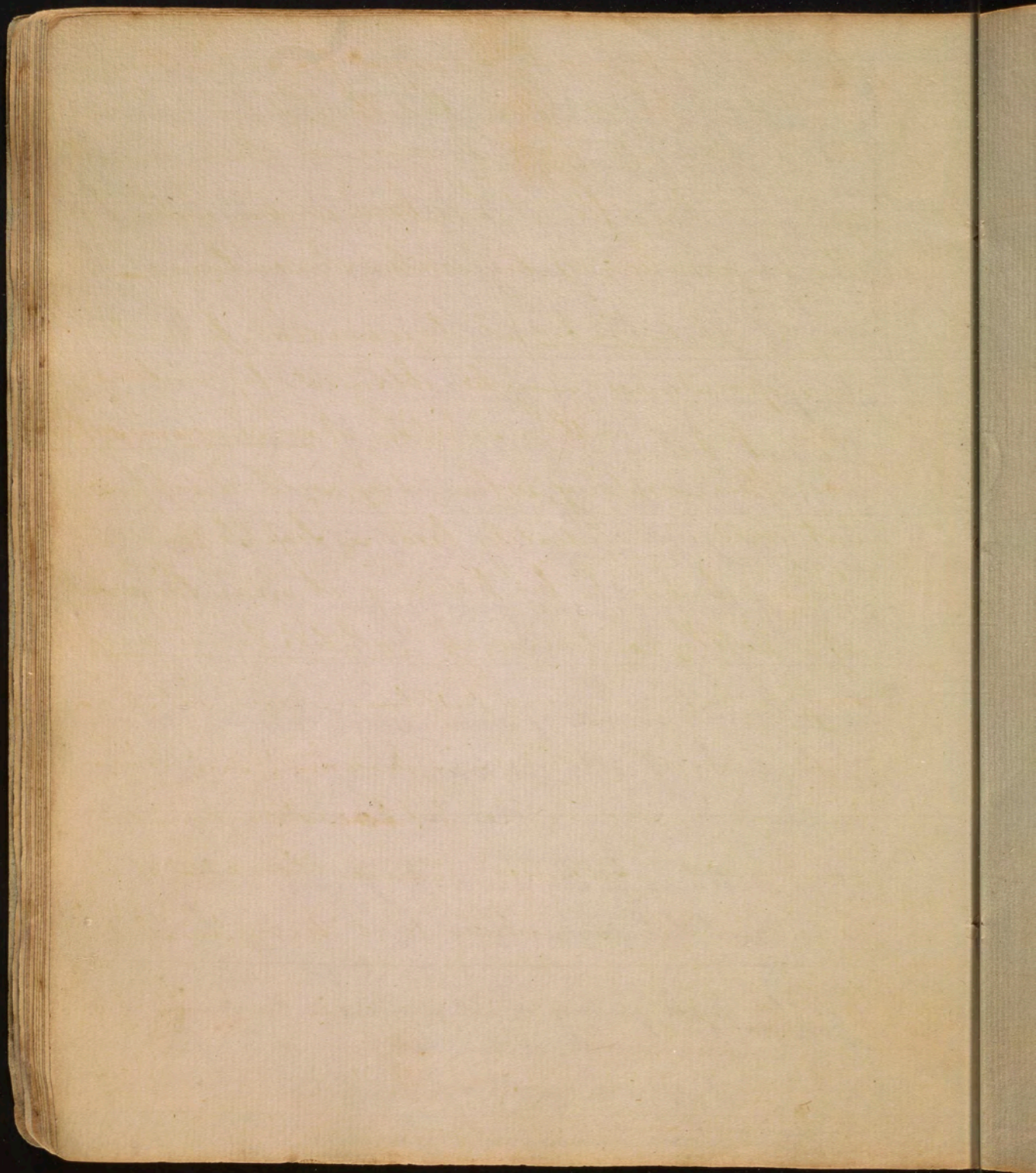
Clocks and jacks, with a variety of other engines, are formed by a knowledge of the mechanic powers, which have been happily discovered, to increase the powers of man, and to lessen labor. Clocks & jacks, move by means of weights, or springs; one sort of jacks perform their motions by means of smoke.

Lamps are of various kinds. The best, now in use, is the new fashioned lamp which consumes its own smoke; and has several plates, which make it to reflect the rays of light better than any other. One of these lamps gives as much light as eight candles.

Candles are made of spermaceti, tallow, bees wax, &c. their wicks of cotton, or tow; the best wicks are made by mixing cotton and tow.

Pens - When quills are oily, pens made of them will not let down their ink freely: boiling quills in lye will deprive them of their oil. <sup>It should be kept in lye or not according as the quill is hard or soft.</sup>  
Ink. - black ink is made of an astringent vegetable, as white oak galls, green vitriol and soft water - cloves preserve it; sugar is not fit for ink. - In







49

In China pigments are used for ink. — They  
roast and powder rice; this they dissolve in wa-  
ter; and write with brushes — Ink generally  
gets blacker after it has been written with, by  
the evaporation of the water it contains —

Sympathetic ink, which is used in private  
correspondences may be obtained by writing  
upon paper with a solution of saccharum satur-  
ni; this writing, when dry, will disappear;  
but will immediately become legible, and of a  
brownish black, by holding it near the mouth  
of a bottle containing volatile tincture of  
sulphur, or Liver of Sulphur — or a Solution  
of oxymuriatic (which is arsenic & sulphur)  
in lime water. The phlogiston emitted  
from these substances reduces the calx of the  
lead, and thus restores to it its natural dark  
color. —



+ Proper time for studying - Injury of  
Night studies from <sup>stimulation</sup> of thinking -  
Air of candles - low fires - <sup>cold feet</sup> - Loss of ex-  
citability -

Silver & Iron vessels most wholesome,



50

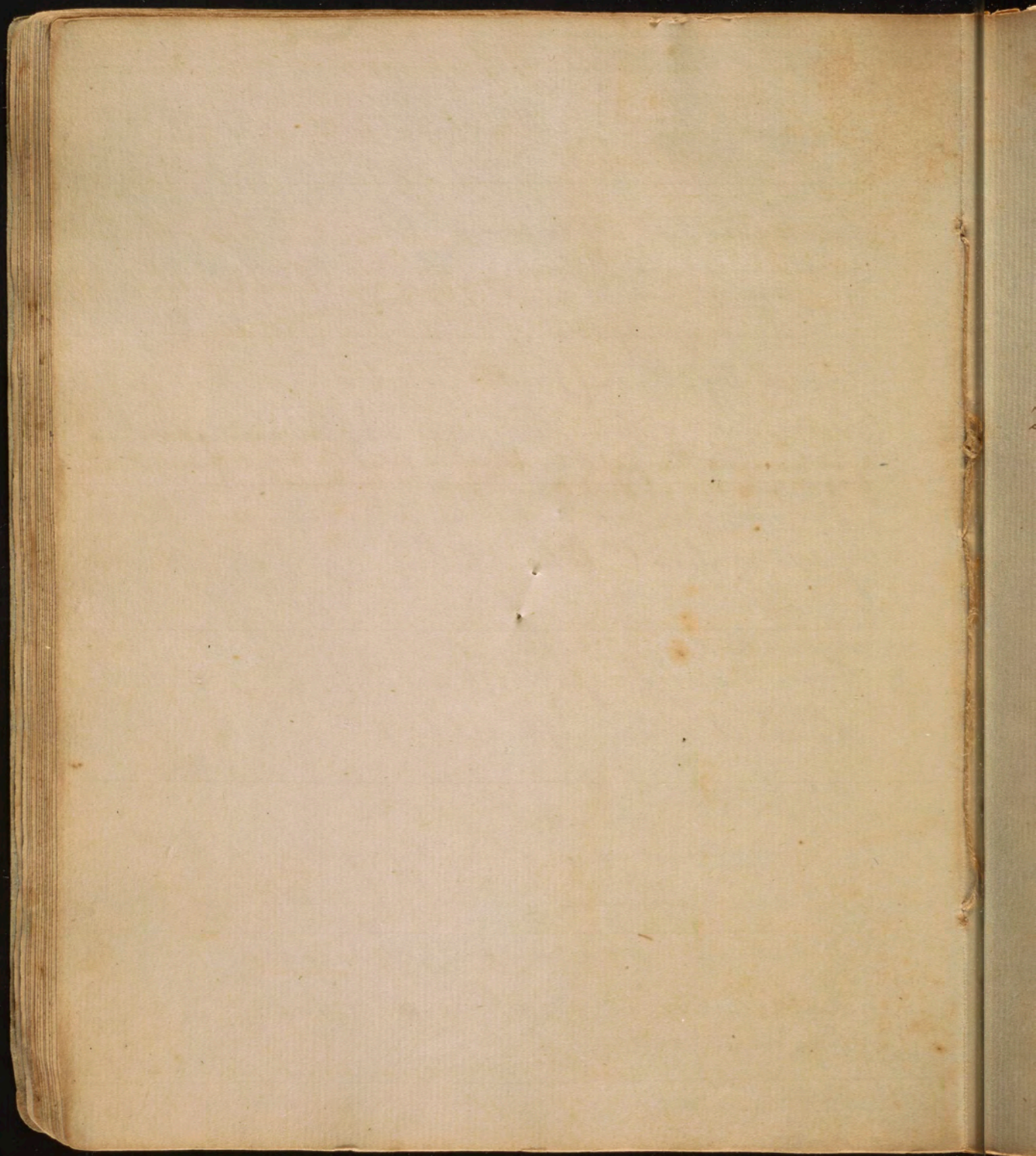
Paper, is obtained from rags beaten, & boiled into a pulp. They are then taken out into a machine like a sieve thro' which the water flows leaving the paper behind. This is taken out of the mould or machine, & pressed between flannels till it is dry. It is afterwards sized, or glazed.

Books are composed of a number of sheets of paper bound together—(for the mode observed in printing books, see a printing-office). In reading & writing avoid receiving the light in front—raise the book to prevent the fatigue of the eye—& stand to avoid pain in the breast. +

Thermometers are instruments to measure the degrees of heat. When the mercury stands so low as  $32^{\circ}$ , or under, we have ice; at  $62^{\circ}$ , or under, fire beyond  $80^{\circ}$  heat is oppressive becomes necessary; at  $96^{\circ}$ , and from that to  $100^{\circ}$ , the heat of our atmosphere is equal to that of the human body: from  $110^{\circ}$  to  $120^{\circ}$  it is feverish.

Barometers serve to shew the gravity of the air; and are, therefore, useful in predicting changes of the weather— in damp weather the air is light; in clear weather it is heavy.







## Means of preserving beauty

Beauty depends upon shape, teeth, and complexion.

1. Shape— The line of beauty is an erect posture— tight lacing spoils the shape, and impairs the health. The simplicity of our Quaker ladies' dresses is worthy of imitation.

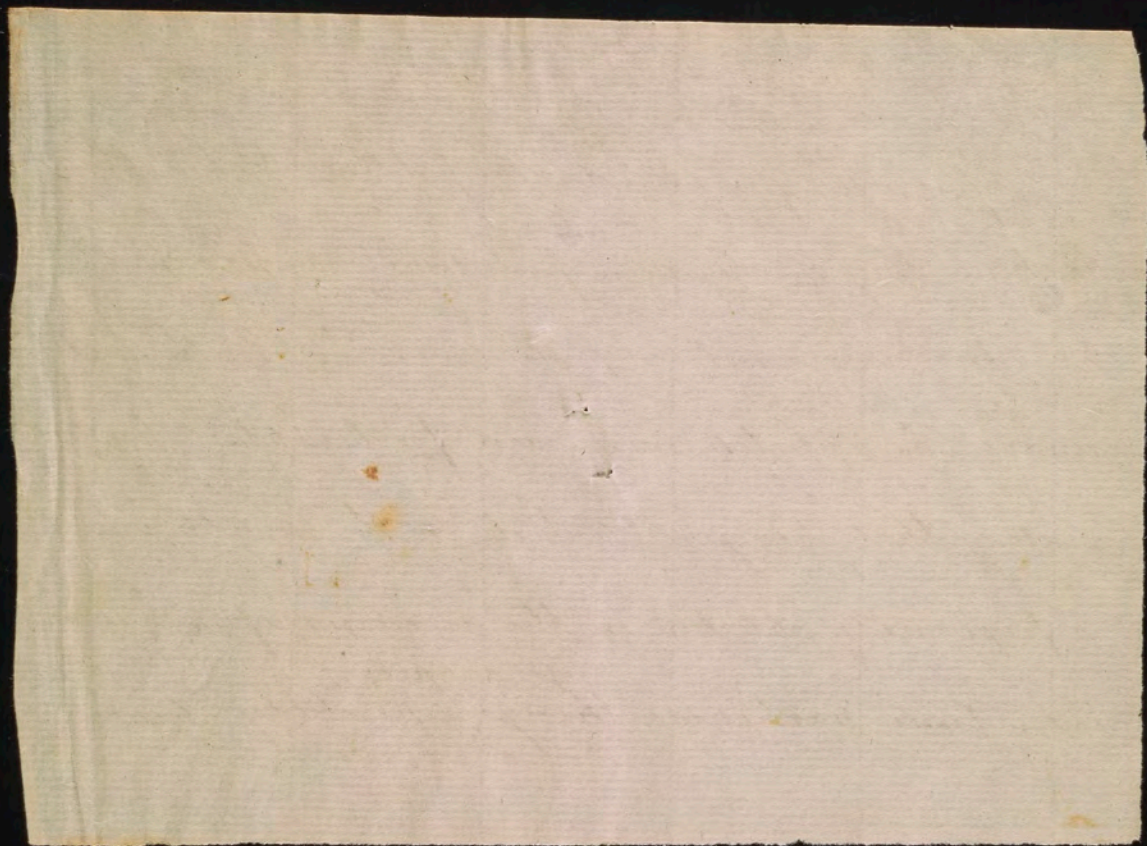
2. Teeth may be preserved and set in graceful order by employing a dentist for that purpose; nor, can any money be better laid out, than in the preservation of our teeth— it is best to have them nearly touching each other. They ought to be cleansed, frequently, in the mornings and after meals with a brush and cold water; so soon as teeth are decayed by the tooth-ach &c. they should be immediately drawn; or they will affect the others by sympathy. Washing the mouth, and behind the ears, every morning with cold water is of <sup>great</sup> infinite service to preserve teeth, health, and complexion—

Decay of the teeth is occasioned by a changeable climate: it is therefore prudent to sleep <sup>with</sup>



Just before going to bed is the best time for brushing  
the teeth, they then remain perfectly clean for eight or  
ten hours, which not only preserves the breath, but  
renders the appetite more keen for breakfast, by pre-  
venting that disagreeable taste in the mouth, which  
is frequently observed in the morning, after having  
eaten some particular things, <sup>for supper,</sup> especially cheese.







METHOD of Preserving the Beauty of TEETH.

*From a Letter of Dr. Mitchell, to ———.*

SOME experiments which I have made upon human teeth by calcination and solution, convince me that they contain, particularly in their outer coat, or covering, a large proportion of CALCARIOUS EARTH. This incrustation is secreted by the arteries of the teeth, and regularly deposited all around, to defend them from outward accidents. When it is corroded or worn off, and the naked bone exposed to the operation of air, spittle and aliment, the diseased teeth soon corrupt. While it remains unhurt and entire, they generally continue useful and ornamental. But what avails the knowledge of these facts, unless we gain some *practical advantage* by them? From these facts then, we may learn, that the enamel of the teeth, which is so remote from the influence of blood and nerves as to be nearly allied to inanimate matter, is, like chalk, egg shells and marble, readily acted upon by ACIDS. Whence a sufficient reason appears, why very tart apples occasion, soon after eating them, a sort of soreness or unpleasant sensation in the teeth; why the frequent use of sharp vinegar in pickles and sallads is injurious; why lemon juice and tamarinds are also destructive; why spirit of vitriol is still more ruinous; and why soot and tartar, employed as dentrifices, by the acid they contain are often productive of irreparable mischief—as likewise why young folks who indulge the pernicious habit of chewing allum, damage their teeth excessively.—Hence too, we may further learn, that the best way to prevent their decay and loss, is to wash them frequently with PURE WATER and wipe them clean with a soft towel, and neither *chemically* corrode them with vegetable and mineral acids, nor *mechanically* wear them away by scouring with hard and gritty powders.

Does it now seem at all wonderful, as people are accustomed to take so many hurtful substances into their mouths, that the teeth suffer detriment thereby? Is it not rather matter of surprise, considering all these things, that many have any teeth left? And is not your question, ‘why are bad teeth so common,’ in a good measure answered?—So far, therefore, as the present subject extends, the preservation of BEAUTY depends upon a sure and certain principle, easy to be understood and followed. As to that harmony of shape and features in which the remaining part of beauty consists, the pious Mr. Lavater thinks it is inseparably connected with moral excellence; I shall therefore only add, in the sentiment of this most able physiognomist, that “The way to be handsome is to be good.”



handkerchiefs, India bandanos, ell-wide persians, 1.2 yard and 1-2 ell farfets, black modes, sewing silks, black and white lace and edgings, lawn and cambrics, white and coloured threads; a handsome assortment of mens and womens worsted, cotton, and silk hosiery; 7 8 and yard wide Irish linens; Scotch shirting; bedticks; diaper and tablecloths, buckrams, tapes, pins, needles, &c. &c. &c.

N. B. Flaxseed, Pot. Ash and Bees Wax, bought or taken in payment. mwf

FOR SALE BY  
**PRAGERS & CO.**  
**HOLLAND GENEVA** in pipes  
and jugs

Pest Dutch Madder in large and small casks

Jesuits Park, Opium, refined Camphor

British and Reach Allum

Dry and ground in oil best English White Lead.

Pearl Barley

Claret, Hermitage, and Rhine Wine in bottles

Cerman Scythes, and Maryland whet stones

Ironmongery and Hardware

China and Delf ware

Superfine and coarse Broadcloths, different colours

Coatings, Duffels and Bearskins

Spotted and striped Ververets

Checks, cotton and linen, 7 8, 8 8, and 11 8

Ditto furniture

Flanders bed Tick, 9 4 and 10 4

Bed Bunts, 7 4 and 8 4

Coarse and fine mens, boys, and girls' Hats

Hatter's Trimmings assorted

Ticklenbergs, Osnabrigs, Heilens

Platillas Royal, Dowlasses

Fine Flanders Linen and Sheetings

India Taffeties and coloured Lutestrings

Bandano, Barcelona, Romal, silk and cotton handkerchiefs

Blond Laces and Gauzes

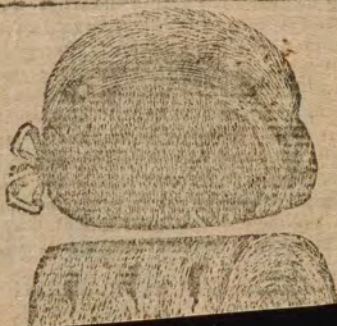
British Sail Duck, No. 1 to 6

Writing Paper of different sizes, Sealing Wax, &c.

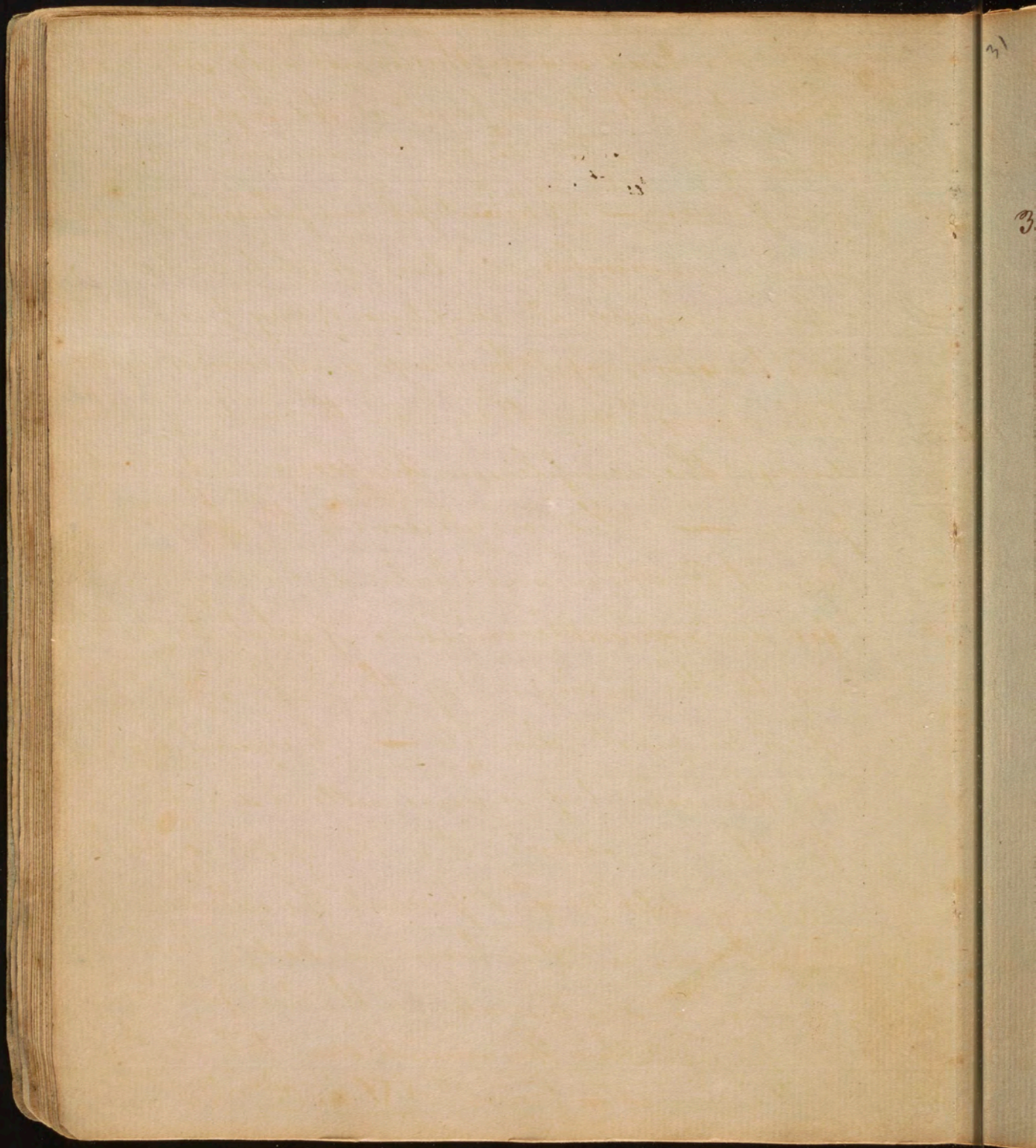
ALSO—A fresh and general assortment of BOULTING CLOTHS. and a few pipes, hogheads, and quartercasks of London particular Madeira WINE.

December 10.

w&lttf









31  
with the head warm: this is not only serviceable to our teeth, but also preserves the sight, and the hearing. Here be full on the treatment of the

3. Complexion <sup>teeth.</sup> — A beautiful complexion depends upon an agreeable mixture of white and red. The sun injures all complexions; very fair complexions, however, repel his rays, and receive very little injury from them: on the contrary, the darker the complexion, the sooner a dye takes place — The complexions of the ladies in Great Britain and Ireland are remarkable for an agreeable mixture of white & red owing to the moisture of their atmosphere in that temperate climate — Frequent washing in this country is an excellent substitute for their moisture; it is also good for health. Washing dissolves, and prevents the collection of, exudations on the human body. Pure water, as rain, or snow water, is the best for this purpose: of this the ancients seem to have been well informed — hence Job IX. 30. "If I wash my



+ Indian meal & weak lye - an excellent

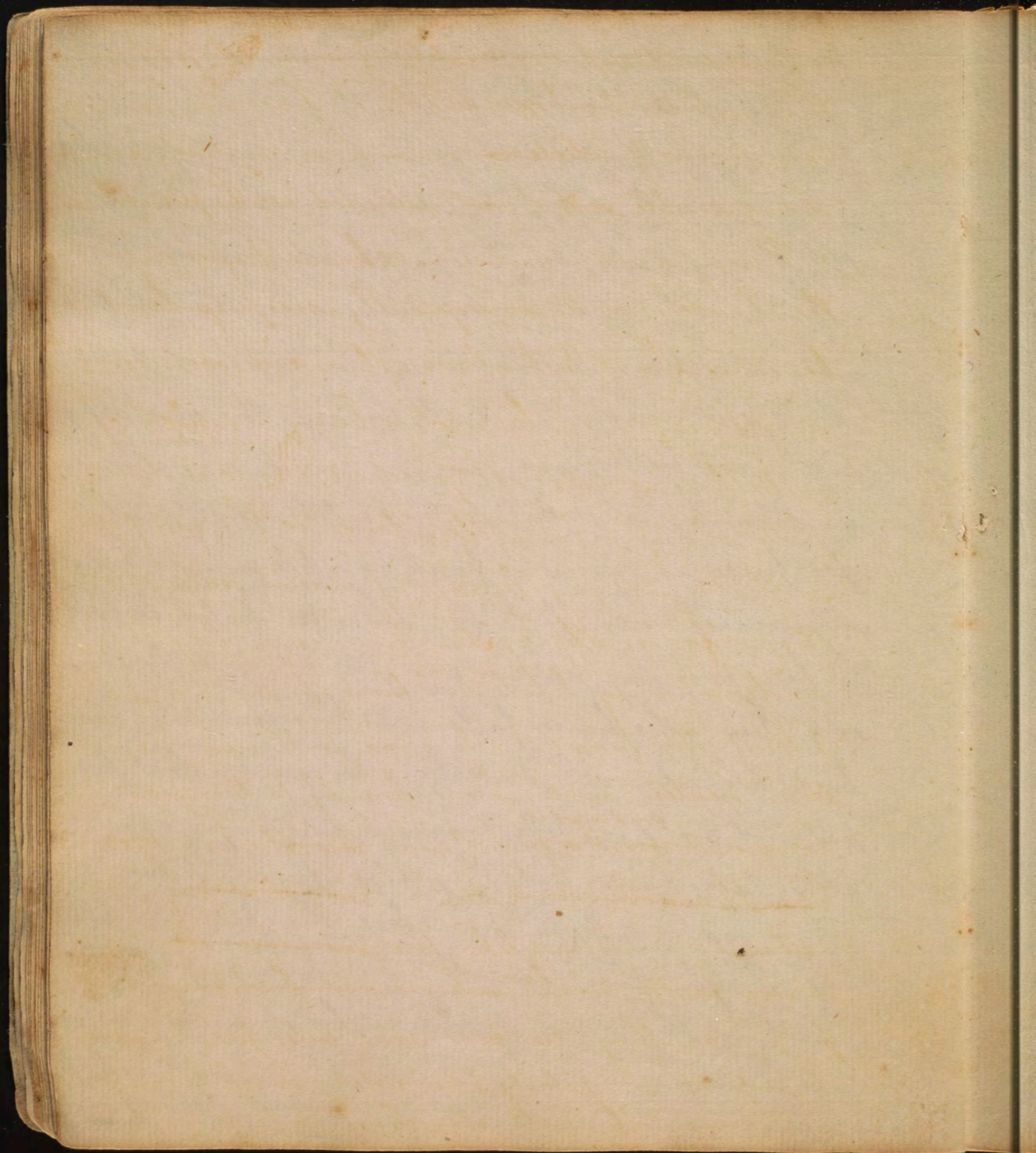
\* wash - a brown complexion turns  
much sooner than a fair woman



"myself with snow-water, and make my hands  
"never so clean". +

4. Good health is essential to beauty; also, to our pleasure, and happiness, while in this world: therefore, we should <sup>be</sup> carefully <sup>to</sup> preserve it. This depends 1<sup>st</sup> upon moderate exercise; the best exercise, in good weather, is walking, in a pure, and open air— 2<sup>d</sup> Early rising, the morning air, air of hills, and country air, are very pure; and contribute much to health, and beauty: for pure air gives a fresh complexion, and communicates redness to the blood (<sup>as among the</sup> Scotch ladies). 3<sup>d</sup> Late evening parties should be carefully avoided; Few, who have followed this practice, have been blessed with health, or longevity. Such people not only imbibe noxious, and impure, air at a late hour; but they also spend their mornings in sleep; and lose the pure air which they might then breathe: the <sup>folly</sup> ~~error~~, of thus inverting the order of nature, by changing night into day, and day into night, generally has its punishment inseparably connected with it.—



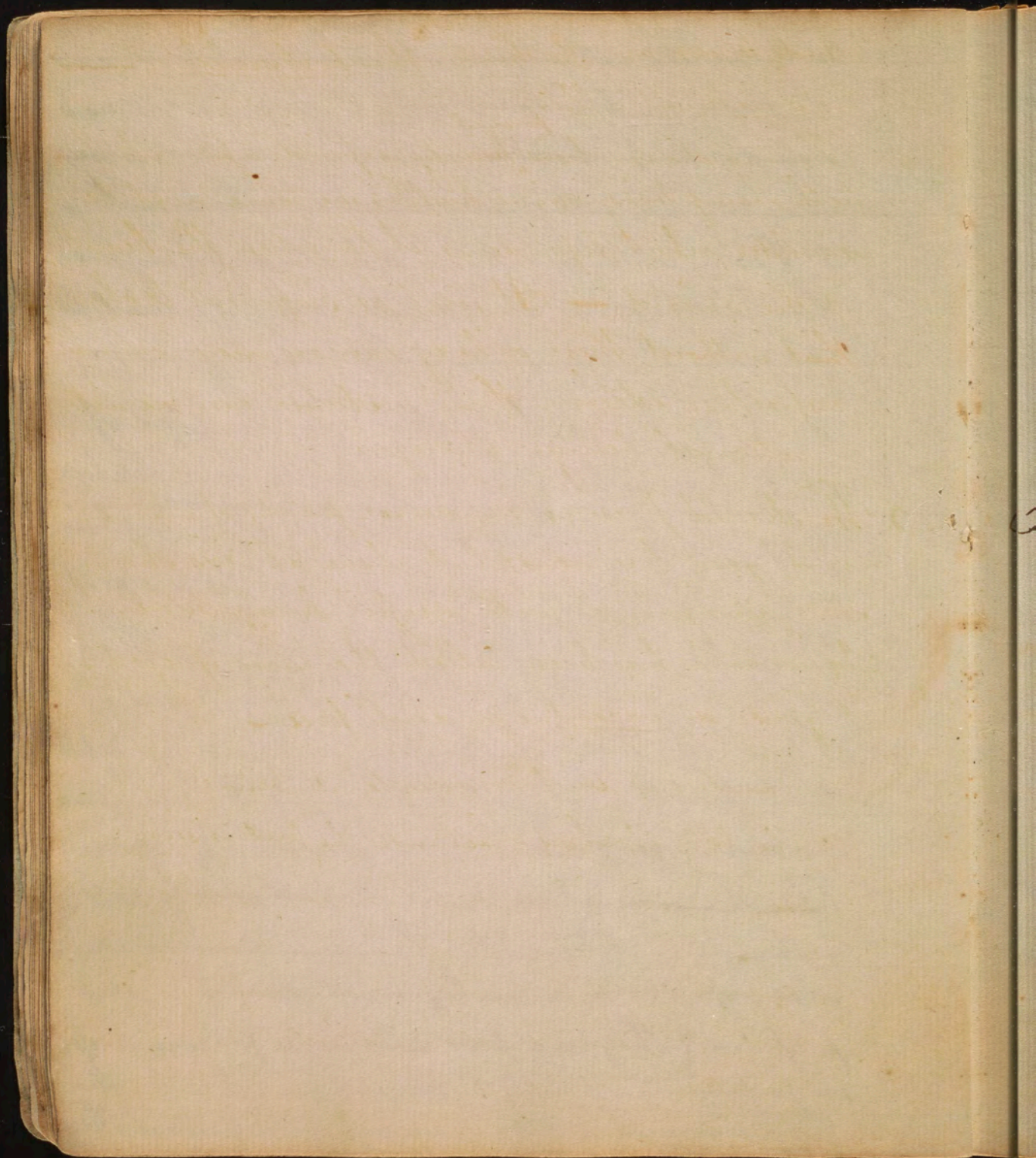




4. We should eat moderately of animal food; and that not too highly seasoned; it gives an immoderate degree of ~~white~~ red; and, indeed, a very disagreeable sort of red, attended with pimples.

5. Heavy, and cumbersome, head-dresses injure the health; and, consequently, are prejudicial to beauty. 6<sup>th</sup> But, above all, avoid cosmetics, and perfumes. Cosmetics, being composed of metalline substances, produce nervous diseases; they also give a yellow tinge to the complexion, so that if a lady be so imprudent as to use them for a while, she can never lay them aside during life. This, then, being the case, I trust the ladies of America will never sacrifice their health, and native beauty, to the use of such <sup>artificial ornaments</sup> ~~borrowed features~~ (if I may use the expression) ~~like the eastern face-draw~~; But that they will rather be ambitious, like the meridian sun, to shine forth with unborrowed lustre — as to perfumes, they are poor substitutes for cleanliness; no perfumes can possibly be wanted, unless to counteract disagreeable smells; cleanliness will prevent these.







And, to use an Irishism, the best smell is —  
no smell at all.

Having shown how <sup>personal</sup> beauty depends upon shape, teeth, complexion, and health; we come next to consider what dependence it has upon the beauties of the mind — It will be sufficient to observe, that without these a lady can no more command respect, or esteem, than a statue can vie with a rational being. Therefore,

5. <sup>you</sup> ~~We~~ should preserve innocence — purity of mind, and good humour; but above all <sup>you</sup> ~~we~~ should store your minds with useful knowledge.

Ignorance has been called the curse of God — it gives a vacant eye and face —

"Beauties of soul irradiate all between  
the body charms — because the soul is seen."



41

+ General Observations - 1 Dr Fortner gills  
Story of Lord Macleish? 2 gratified by  
Dr Cullen of many things unwholesome  
not immediately so 3 Dyspepsia - diff:  
in diff<sup>r</sup> persons - <sup>from Insult &c</sup> diff<sup>r</sup> periods of life & the  
first coming in of particular Aliments - as  
fish - Vegetables &c.

Original Matter - supplied by  
Sugar and  
Acid - Oil. -

The less we drink at our meals the better.  
Hippocras. Addison's Advice. - No wine till  
after dinner. It increases the appetite  
preternaturally. Carving improper

1 disagreeable sight to see whole Animals  
in the shape in which they pleased us when  
alive. 2 Is fatiguing during want of ex-  
citability - 3 Disturbs table & the spoils  
Dishes & deprives 3 or 4 persons of 2 dinners, on



41  
Lecture 11<sup>th</sup>

Of aliments +

We shall begin by enquiring into the final cause or reason of the frequent returns of appetite. —

Why should so much time be employed in this animal gratification? Why were we not so formed as that one plentiful meal should be sufficient to support our bodies for a week — a month — or even a year?

Two reasons may, probably, be given why this is not the case; and why we are so dependant upon the elements that support our bodies as to require two or three meals a day for our nourishment.

1<sup>st</sup> It is essential to our happiness that we should retain a constant sense of our Creator upon our minds. To preserve this sense, at all times, our maker has kindly rendered us dependant upon his bounty, and has, by the regular and daily returns of our appetites, implanted a monitor in our bodies to prevent our forgetting him, and



makes y<sup>m</sup> eat them too quickly.

Health improper. Notting of its folly -  
By obliging people to swallow while they  
speak hurried - Silence best in eating.  
Keeps modest persons from drinking -  
Toasts - Remarks on



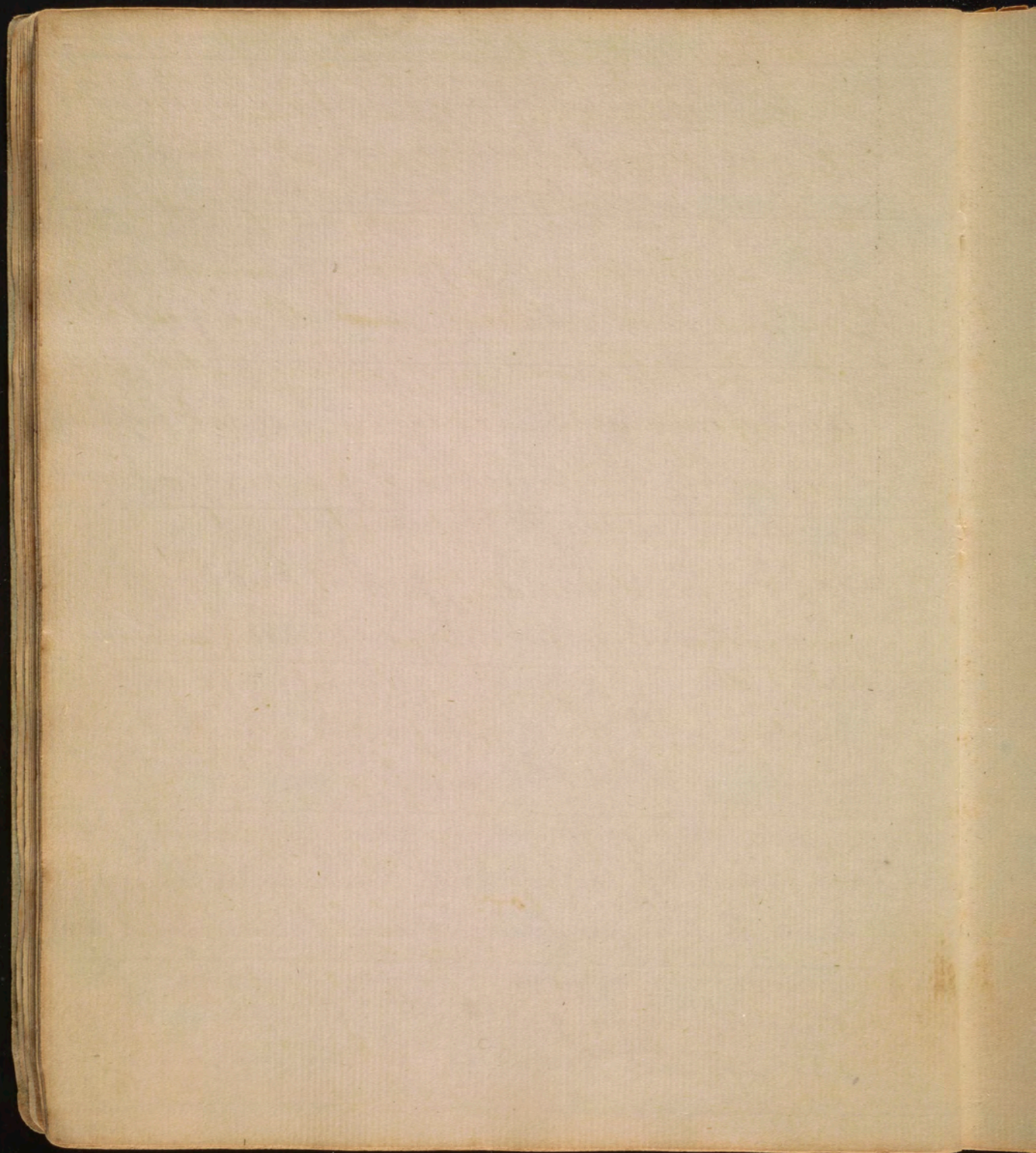
and to remind us of the obligations of gratitude, and obedience which we owe to his goodness. —

The language of Providence, then, in every meal to which we sit down, is — "When this you see  
"Remember me"

2. A second use in the frequent returns of our appetites is, they serve to promote conversation, and thereby, ~~enlarge~~ knowledge, and social happiness by bringing the members of a family — friends — and even strangers, frequently together, for the necessary purposes of eating, and drinking.

I cannot help remarking a further instance of the divine goodness in connecting so much pleasure with the employments of eating and drinking. Had this gratification been left to reason or to instruction, how often would pleasure, business, or indolence have rendered us dead to the necessities of our bodies! and how often would a perverse temper in a child have been the cause of its death! for, if this child was not impelled to eat by the pleasure it derived from eating, it would be as difficult to com-





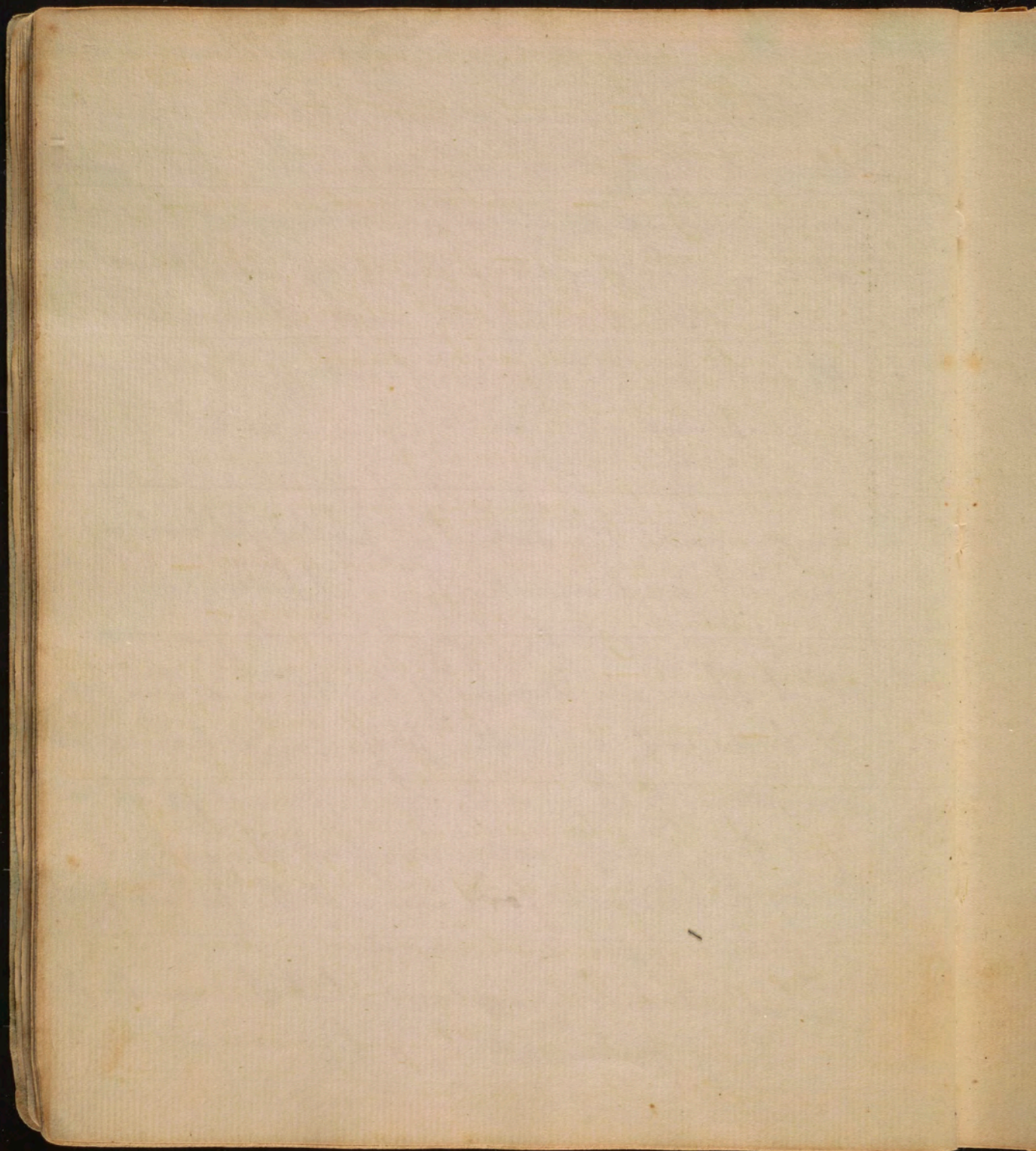


compel it to eat, as it <sup>sometimes</sup> is to make it learn its book.

There is the same relation between different aliments that there is between the notes of music; some agreeing and some disagreeing with each other — The perfection of cooking consists in finding out these relations. — I am disposed to believe the science of cooking is still in its infancy and will remain so till it is rescued from the hands of practical cooks, and made the subject of philosophical experiments, and investigation. I believe there are pleasures to be enjoyed in eating — and that there are degrees of health, and long life, to be derived from the proper, and harmonious, mixture of aliments, that we are yet strangers to. Perhaps discoveries upon this subject may be reserved for some of the female philosophers of this new world.

I shall briefly explain what I mean by the harmony of aliments, by a few examples —  
Bread, and meat, are related, and form a harmony <sup>when</sup>







when mixed together. Bread, and milk;— bread, and butter;— meat, and salt;— satted, and fresh meat;— mustard, and cold beef— cabbage, and vinegar;— mutton, and turnips— venison, and currant jelly— pork, and apple sauce— are alike related to each other, alike grateful to the taste, and alike healthy, when taken into the stomach.

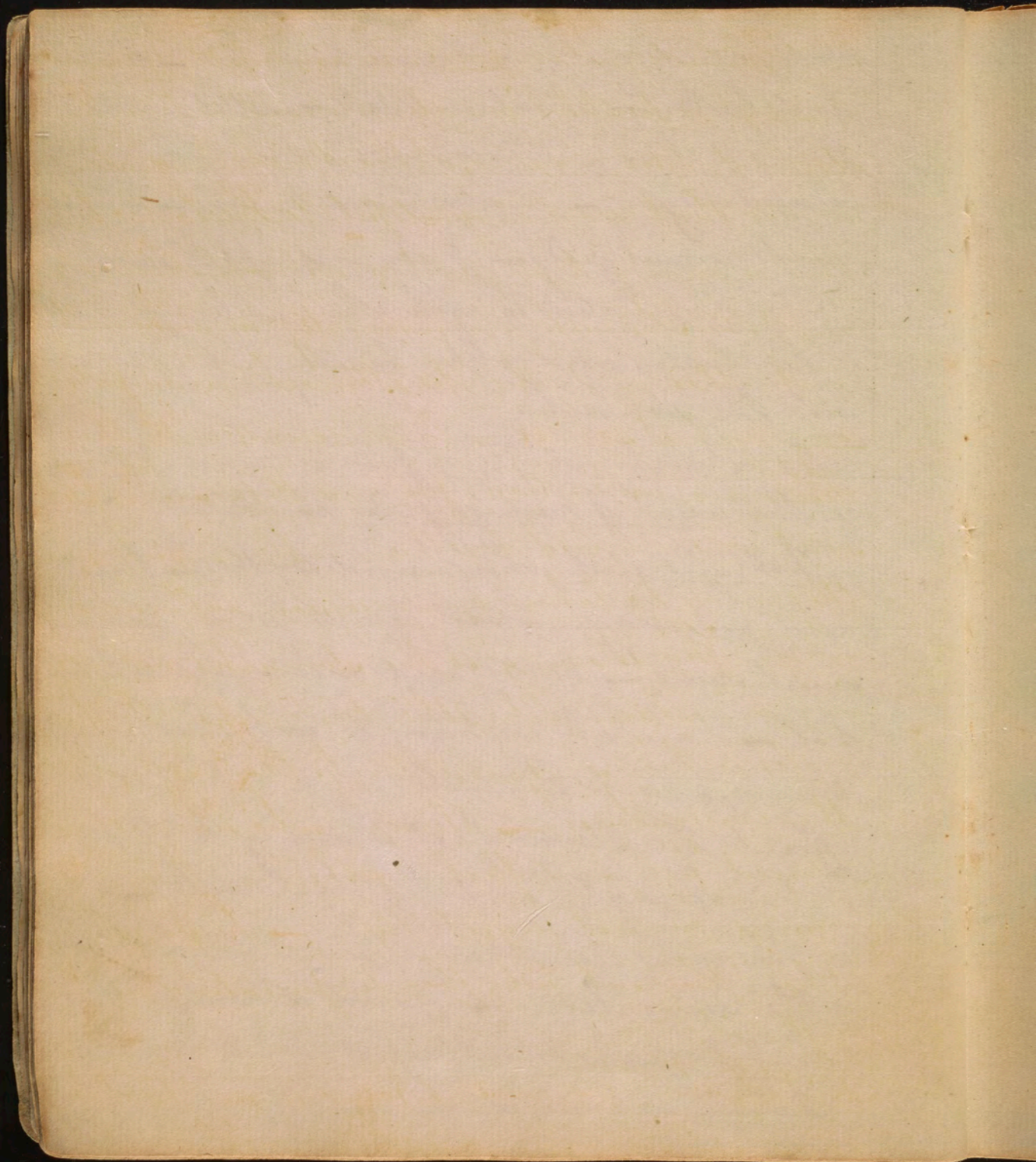
Let us next mention a few instances of discord, or, the want of harmony, in aliments.

Fish, and flesh, when mixed together;— bread, and pudding;— salt, and sugar;— meat, and sweet sauce;— butter, and onion;— milk, and fish— are all contrary to each other, and disagreeable to the taste; and if they do not offend the stomach it is owing to its peculiar strength, and healthful state—

The same observations apply to drinks. There is the same harmony, and discord, in them, when properly or improperly mixed together.

I shall add one, or two, remarks upon this subject—







1<sup>st</sup> The taste, when pure, is an infallible mark of what is healthy in aliments. It is true, the stomach often receives, without rebelling, aliments that are not grateful to the taste: but, this is owing to its peculiar strength. The taste, and the stomach are naturally in union with each other; and, tho' the stomach may forbear long, yet it sooner or later accords with the decisions of taste: thus, fish and flesh are unpleasant when mixed together in the mouth; yet, they may be taken, in succession, with impunity. This is owing to the stomach's not giving an alarm, like the taste, upon the first violence being offered to it. But, attend to the consequences — Persons who have long mixed fish and flesh together in their stomachs cannot digest them — hence, we find, when they eat fish, they prefer eating nothing after it.

2. How shall we account for so many <sup>old</sup> people <sub>in</sub>







in high life in all countries? we read of noble-  
men of 70, — 80, and even 90, years of age; who fare  
sumptuously every day, and yet feel no incon-  
venience from it? — I ascribe their health,  
and long life, entirely to their living upon  
the best of food, mixed in such a manner as  
to form a perfect harmony, to the taste, and in  
the stomach. It is this agreeable and harmo-  
nious mixture of aliments that enables some  
persons to eat such large, and frequent, meals,  
without much, or any, inconvenience. And it  
is the want of this harmony, or proper mix-  
ture, I suppose, that makes even the most  
wholesome aliments, taken in the most mo-  
derate quantities, produce diseases in many  
people. The Germans, in this state, are much  
afflicted with stomach complaints, owing to  
their aliments not being in quality, quantity,  
or mixture proportioned to their constant la-  
bour. —

23



(a) as to the time of eating much has been said by different Authors. If it be admitted that only one meal of animal food should be eaten in the day, the evening is certainly the best time for taking it.

Rest after a full meal promotes Digestion.

~~The~~ Between the hours of \_\_\_\_\_ is the best, as it favours perspiration afterwards.

~~Sleep~~ Sleep is proper after eating provided it is not taken in a horizontal, but in a sitting posture. The Portuguese custom is a good one. They ~~recline~~ set on the floor after dinner ~~and~~ with their backs ag<sup>st</sup> a wall, & support their arms with a chair on each side of them. Where a hearty supper is taken, no meat sh<sup>d</sup>. be ~~ate at dinner~~.



3. Harmonious mixtures are useful - vegetables, of every kind which are eatable, perfectly harmonize with each other; and by blunting the appetite prevent the eating of an excess of meat -

Of fermentation.

(22)

Fermentation is an intestine motion between dissimilar bodies; or dissimilar elements. All animal, and vegetable bodies undergo it. There are three stages in fermentation - 1<sup>st</sup> the vinous, as wine, or as beer in its first stage, when it is fit for use -  
+  
+ 2. the acetous, as vinegar - and, 3. the putrefactive, when it has become putrid -

The following circumstances are necessary to favour fermentation.

1. Heat - from 70 to 100 degrees; a greater heat than this promotes fermentation too rapidly, and hurries on to the putrefactive stage.
2. Moisture. - Sugar never ferments unless assisted by water or some other liquid - 3.







3. Access of air is necessary —

4. Rest - agitation hurries on too rapidly to the acetous, or putrefactive stages. — and;

5. Ferments. in some cases are necessary to hasten it — hence, yeast is used in baking &c.

We shall apply these <sup>principles</sup> as we go along. —

### Of animal food

It has been warmly contested by some that nature never designed man to feed upon animal food. This doctrine has been supported by many ingenious arguments — But that animals were designed for our use is evident, for the following reasons —

1. The declaration of almighty God in sundry parts of the scriptures — that they were for the use of man.

2. Our teeth are not constructed <sup>entirely</sup> similar either to those of the granivorous, ~~herbivorous~~, or carnivorous animals; but, are a mixture of the ~~three~~ <sup>two</sup> — hence it is plainly the will of god that we should <sup>eat</sup>



the number or nature of the powers of the mind  
that are suspended by Sleep. Persons who labour,  
or who go to bed after being much fatigued  
seldom dream. A full meal - an indolent  
life - indisposition - or the application of a  
stimulus to any kind to <sup>the body</sup> ~~any of the senses~~ - such  
whether it be hunger - thirst - heat - cold -  
light or sound, generally occasions dreaming.  
It is, <sup>chiefly</sup> from the action of light  
~~that we dream most~~ & sound upon the  
<sup>principally</sup> senses that we dream most in the mornings.

- If dreams depend upon natural causes,  
the supposition of their being ~~intended~~ <sup>intended</sup> to admonish  
~~us of future events~~ <sup>us of future events</sup> must be highly un-  
-philosophical. To be ~~affected~~ <sup>therefore</sup> in-  
fluenced by them, in any degree in ~~any~~  
our opinions or actions is a mark of a  
weak mind, or a vulgar education.

"Blindness to the future", was "wisely given"

"That each ~~may~~ <sup>might</sup> fill the circle marked by heaven.  
I grant that a connection is sometimes perceptible



eat a mixture of vegetable and animal food.

3. Experience shows that this mixture is the most wholesome food for man; for to feed entirely upon either, would soon produce sickness, or debility. 5 By killing animals, we save a great deal of animal life - if this were not done - the world would not hold them all. - +

4. If man had been, by nature, designed not to be carnivorous, there would doubtless have been found, somewhere upon the globe, people who do not feed on flesh; which is not the case —

Every animal <sup>has been</sup> used, as food, at some time or place. — Wild meats are most easy of digestion for being killed in the chase, and killed without depriving them of their blood; they tend speedily to putrefaction — hence they don't bear long keeping — The inhuman practices of bull beating, and throwing at cocks, have been invented, to procure substitutes for wild flesh. — Legs of quadrupeds, and wings of wild birds, from being most used, are hardest of digestion.

+ Besides many animals eat animals. Do only - agreeable to creator.



between dreams & <sup>subsequent</sup> ~~future~~ events - but by  
no means so often as between subsequent  
events, and our waking thoughts <sup>and these</sup> ~~the subjects~~  
~~have~~ certainly cannot be ascribed to a super-  
natural influence upon our minds. In all  
those cases where a connection happens  
between our dreams & events, it must be  
ascribed to what has been very properly  
called accidental coincidence.

of animal food from fullen.  
& castrated  
Small animals easier digested than <sup>male</sup> ~~female~~.  
young more soluble <sup>in</sup> old - except in weak stomachs  
when there is a tendency to acrimony, & alkaliescent  
aliment is req<sup>d</sup>: - <sup>fleshy</sup> fat meat easier <sup>in</sup> lean - kept  
meat <sup>in</sup> fresh killed - Hunted or exercised animals  
easier digested - Old animals <sup>the</sup> young flesh put on  
them digested <sup>easier</sup>, & perspire easier <sup>in</sup> young animals being  
more saline. Animal food more nourishing <sup>in</sup> ~~than~~  
Vegetable - produces plethora & Obesity - & irritability  
Keepiness After eating from energy of brain  
being directed to heart & stomach. The legs



Domestic, or tame, animals, being deprived of their blood are less savoury, and harder to be digested than wild ones; grain with exercise is necessary to <sup>improve</sup> ~~fatten~~ them; confinement helps to fatten them, but moderate exercise diffuses the fat. They bear keeping, and are made tender by it - but, are much more tender if killed by electricity. Legs of tame fowls are less easy of digestion, than wings, because more used. Ducks, geese, and pigs, should be eaten soon; otherwise they are apt to become rancid by means of the great quantity of oil they contain. Young animals abound with mircillage and are therefore <sup>less stimulating</sup> ~~sooner digested~~ than <sup>old</sup> ~~young~~ ones. Beef and mutton, however, are ~~exceptions~~ to this rule; and are more easy of digestion than veal or lamb: but they must not be too old - beef and mutton are best from 5 to 7 years old. Madame Darconville's history of putrefaction shows that beef and mutton putrefy <sup>sooner</sup>



we eat +

animal food, the better -

Ox - ~~most~~ nourishing - Sheep next lambs  
most nourishing that have suck'd 6 months.  
The lean of fat meats most nourishing -  
- Hog nourishing from its fat - pigs lard, from  
lard not be kept too long.  
lard fat - White meats less alkalulent & red - the  
last most blood. - Chickens best 1 year old - a white  
meat - even more valuable y<sup>o</sup>. Cock. Capon & pou.  
- Curd best - crammed fowl rapid & tender -

Pheasant tough - partridge & quail easy of digestion  
Geese & Duck - alkalulent - should not be kept too  
long. Animals w<sup>h</sup> fly have tough breasts & wings  
& tender legs & vice versa. - young pigeons very  
alkalulent & tender - Eggs wholesome - small  
quantity satisfies & nourishes -

+ Fish - Cullen  
not the same difference between young & old  
as quadrupeds - less perspirable y<sup>o</sup>. meat, but  
perhaps equally nourishing - may weaken y<sup>e</sup>.  
body by checking appetite from sameness.  
Crabs & Lobsters like lean fish - not so nourish<sup>g</sup>.  
as fat fish. do to conclusion. + last p: but two



5  
sooner than veal, or lamb - and consequently  
are more easy of digestion: the former from  
greater strength of stomach, teeth &c. are more  
completely animalized than the latter, which  
cannot sufficiently chew, nor digest, their vege-  
table food: and, therefore <sup>they</sup> retain so much of  
the <sup>matter</sup> ~~acids~~ of these vegetables, in their blood, as  
prevents a speedy putrefaction - see the last  
page

+ Fish are supposed, by some, to have been the first  
food of Adam after his expulsion from the  
garden of Eden; which he might probably <sup>have</sup> obtained  
from the rivers <sup>near the garden</sup> ~~in the garden~~ more easily than he  
could <sup>have</sup> caught any of the beasts of the field which  
shunned his presence.

Fish soon become rancid; they should, therefore  
be eaten soon after they have been taken out  
of the water: they are a solid food, and require  
good health to use them - Pepper, vinegar &c  
are necessary with this aliment to promote di-  
gestion - hence the Africans, are all fond of <sup>fish</sup>



high seasoning with it - Butter harmonizes  
well with fish - it is also prudent to drink a little  
<sup>wine,</sup> brandy, or other spirit, after a meal of it - hence  
the proverb of fish swimming three times - first  
in water - second in butter - and, third in wine.

In order to prepare a fish properly much de-  
pends upon boiling it sufficiently; but, not too  
much - It floats when boiled, and, again,  
sinks when boiled too much. - Mr Henry  
of Lancaster restored a fish beginning to be  
putrid by keeping it 12 hours in a well of  
limestone water - covered with the water.

### a corn pudding

Twelve ears grated fine cream  $\frac{1}{2}$  or butter  $\frac{1}{2}$   
or milk  $\frac{1}{2}$  & Butter  $\frac{1}{4}$  - baked  $\frac{1}{2}$  an hour  
in a dish <sup>the covering of the</sup> ~~the~~ corn to be placed under & around the  
pudding except in one place.



1. Whence is heat derived?
2. Is it lodged in all bodies?
3. Does heat ascend or descend?
4. How do you prove it?
5. Does heat contract or expand all bodies?
6. How do you prove that there is heat in snow?
7. How ~~do~~ can you prove heat to be in ice?
8. When is fire necessary in our apartments?
9. Which is the best method of extinguishing fire in chimneys?
10. How do you prevent <sup>the increase of</sup> Mosquitoes?
11. Which is the most effectual method of destroying bugs?
12. How ~~do~~ can you preserve woollen clothes from rot in summer?
13. How are <sup>the</sup> stains of red wine & cherries &c. taken out of linen?



11. Can you tell when fish are boiled sufficiently?  
12. How do you preserve eggs?  
13. How are herbs preserved?  
14. Is tea wholesome?  
15. What do you think of coffee?

++ Oysters - best raw & fresh - very  
slow & difficult of perspiration - hence nourish  
most.



with 2?

2?

my

sh



Recommend the  
Use of Liq. Land: instead of  
Spirits in families.

Remarks on Dinners - 1 cold rooms - Canada -  
2 Porcelain & China plates  
- pewter best -  
3 carving - 4 healths  
5 Silence - food eaten best  
& best chewed. - the  
less we drink with  
our dinners the better.

Hard to tell <sup>to</sup> is wholesome & to not. - Stomach  
like conscience sleeps under violence - & impro-  
per Alim<sup>t</sup> often does not produce its bad effects  
for years - Moderation in quantity a good  
rule.



13 - Mrs - Da - p - r

no



## The Twelve Signs.

- ♈ Aries, or the Ram.  
 ♉ Taurus, the Bull.  
 ♊ Gemini, the Twins.  
 ♋ Cancer, the Crab.  
 ♌ Leo, the Lion.  
 ♍ Virgo, the Virgin.  
 ♎ Libra, the Balance.  
 ♏ Scorpio, the Scorpion.  
 ♐ Sagittarius, the Archer.  
 ♑ Capricornus, the Goat.  
 ♒ Aquarius, the Waterbearer.  
 ♓ Pisces, the Fishes.

## Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	-	9	12	15	18	21	24	27	30	33	36
4	-	-	16	20	24	28	32	36	40	44	48
5	-	-	-	25	30	35	40	45	50	55	60
6	-	-	-	-	36	42	48	54	60	66	72
7	-	-	-	-	-	49	56	63	70	77	84
8	-	-	-	-	-	-	64	72	80	88	96
9	-	-	-	-	-	-	-	81	90	99	108
10	-	-	-	-	-	-	-	-	100	110	120
11	-	-	-	-	-	-	-	-	-	121	132
12	-	-	-	-	-	-	-	-	-	-	144

## Money.

f. s. d. q.

1—20—12—4

Avoirdupois Weight.

T. C. Q. lb. oz. dr.

1—20—4—28—16—16.

Troy Weight.

lb. oz. dwt. gr.

1—12—20—24.

Apothecaries Weight.

lb. oz. dr. scr. gr.

1—12—8—3—20.

Wine Measure.

T. P. H. G. Q. P. G.

1—2—2—63—4—2—4.

Long Measure.

D. M. F. P. Y. F. I. B.

1—60—8—40—5—12—3.

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. Y.

1—4—40—51.

Dry Measure.

B. P. G. P. Q. P.

1—4—2—2—2.

Cloth Measure.

Y. Q. N. In.

1—4—4—21.

Time.

Y. D. H. M. S.

1—365—24—60—60.

Thirty day hath September,  
April, June, and November;  
February hath twenty-eight\* alone,  
All the rest have thirty-one.

\* Twenty-nine, every qrb or leap year.

## Numeration.

Millions.	Millions.	Thousands.	Thousands.	Hundreds.	Tens.	Units.
C	X	C	X	H	T	U
9	8	7	0	5	4	3
2	0	5	2	1	4	6
4	0	2	5	3	0	0
		8	2	0	7	5
			6	0	0	9
				5	0	0
					7	0
						9
						4

## Pence Table.

d.	s.	d.
20	1	8
30	2	6
40	3	4
50	4	2
60	5	0
70	5	10
80	6	8
90	7	6
100	8	4
110	9	2
120	10	0

## Numerical Letters.

1 5 10 50 100 500 1000  
 I. V. X. L. C. D. M.  
 MDCCLXXXVII.

BOOK

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